

S3-Leitlinie (Leitlinienreport)

Zahnimplantate bei medikamentöser Behandlung mit Knochentiresorptiva (inkl. Bisphosphonate)

AWMF-Registernummer: 083-026

Stand: Juli 2016

Gültig bis: Juli 2021

Federführende Fachgesellschaften:

Deutsche Gesellschaft für Implantologie im Zahn-, Mund- und Kieferbereich (DGI)
Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde (DGZMK)

Beteiligung weiterer AWMF-Fachgesellschaften:

Deutsche Gesellschaft für Kieferorthopädie (DGKFO)
Deutsche Gesellschaft für Mund-, Kiefer- und Gesichtschirurgie e.V. (DGMKG)
Deutsche Gesellschaft für Parodontologie e. V. (DG PARO)
Deutsche Gesellschaft für Prothetische Zahnmedizin und Biomaterialien e.V. (DGPro)

Beteiligung weiterer Fachgesellschaften/ Organisationen:

Arbeitsgemeinschaft für Kieferchirurgie (AGKi)
Berufsverband Deutscher Oralchirurgen (BDO)
Bundesverband der implantologisch tätigen Zahnärzte in Europa (BDIZ EDI)
Bundeszahnärztekammer (BZÄK)
Deutsche Gesellschaft für Ästhetische Zahnmedizin (DGÄZ)
Deutsche Gesellschaft für Computergestützte Zahnheilkunde (DGCZ)
Deutsche Gesellschaft für Zahnärztliche Implantologie (DGZI)
Freier Verband Deutscher Zahnärzte (FVDZ)
Kassenzahnärztliche Bundesvereinigung (KZBV)
Verband Deutscher Zahntechniker-Innungen (VDZI)

publiziert
bei:



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Die "Leitlinien" der Wissenschaftlichen Medizinischen Fachgesellschaften sind systematisch entwickelte Hilfen für Ärzte/ Zahnärzte zur Entscheidungsfindung in spezifischen Situationen. Sie beruhen auf aktuellen wissenschaftlichen Erkenntnissen und in der Praxis bewährten Verfahren und sorgen für mehr Sicherheit in der Medizin, sollen aber auch ökonomische Aspekte berücksichtigen. Die "Leitlinien" sind für Ärzte/ Zahnärzte rechtlich nicht bindend und haben daher weder haftungsbegründende noch haftungsbefreiende Wirkung.

1. Geltungsbereich und Zweck

Die Deutsche Gesellschaft für Implantologie und die Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde haben sich u.a. des Ziel gesetzt gemeinsam die Entwicklung und Weiterführung wissenschaftlich begründeter und praktikabler Leitlinien in der Zahnmedizin zu fördern und zu unterstützen. Grundlage dieser Bestrebung sind medizinisch-wissenschaftliche Erkenntnisse der Fachgesellschaften der DGZMK, der DGI, dem Konsens medizinischer Fachexperten, Anwender und Patienten sowie auf dem Regelwerk zur Leitlinienerstellung der AWMF. Leitlinien bedürfen einer regelmäßigen Aktualisierung, um auf dem neuesten Stand des medizinischen Wissens zu sein. Die Umsetzung der AWMF-Regularien soll Basis zur Entwicklung qualitativ hochwertiger zahnmedizinischer Leitlinien sein. Leitlinien dienen der Qualitätssicherung und des Qualitätsmanagements in der Zahnmedizin und sollen gezielt in der täglichen Routine Anwendung finden. Ziel ist es einen therapeutischen Korridor für den praktisch tätigen Implantologen zu formulieren, in dem Bereiche soliden und abgesicherten Wissens beschrieben werden und andererseits Bereiche offen gehalten werden, in denen bislang noch keine definitive Stellungnahmen formuliert werden kann, da die wissenschaftliche Datenlage unzureichend ist.

Diese Leitlinie richtet sich neben den betroffenen Patienten an Zahnärzte, Zahnärzte mit Tätigkeitsschwerpunkt Implantologie, Fachzahnärzte für Oralchirurgie, Mund-, Kiefer-, Gesichtschirurgen und Kostenträger.

Zum Zeitpunkt der Erstellung gibt es keine Ausnahmen von der Leitlinie.

2. Zusammensetzung der Leitliniengruppe:

Zusammensetzung der Leitliniengruppe / Expertengruppe:

<u>Vertreter / Experte</u>	<u>Funktion</u>	09.09.2015 T = Teilnahme	10.09.2015 T = Teilnahme	
Prof. Dr. Dr. Knut A. Grötz, Wiesbaden	Koordinator	T	T	Stimmenthaltung
Prof. Dr. Dr. Christian Walter, Mainz	Federführender Autor	T	T	Stimmberechtigt
Dr. Tim F. Wolff, Wiesbaden	Methodiker	T	T	nicht stimmberechtigt

Erarbeitungsgruppe:

<u>Vertreter / Experte</u>	09.09.2015 T = Teilnahme	10.09.2015 T = Teilnahme	
Prof. Dr. Dr. Bilal Al-Nawas, Mainz	T	T	Stimmberechtigt
Prof. Dr. Dr. Dr. Robert Sader, Frankfurt	T	T	Stimmberechtigt
Prof. Dr. Dr. Stefan Haßfeld, Dortmund	T	T	Stimmberechtigt
Dr. Martin Ullner, Hochheim	T	T	Stimmberechtigt
Prof. Dr. Ina Kopp, Marburg	T	T	zeitweilig als Audit und Moderatorin der AWMF

Die endgültige Abstimmung der Leitlinie fand im Plenum einer Konsensuskonferenz in Aachen vom 9. bis zum 10.09.2015 statt (Teilnehmerliste siehe Langversion der Leitlinie), in der insgesamt 4 Leitlinienthemen verabschiedet wurden (siehe 3.4).

Die Vorstände der beteiligten Fachgesellschaften stimmten der Leitlinie zwischen dem 21.03.2016 und dem 14.07.2016 zu. Hierbei wurden seitens der DG PARO rein redaktionelle Anmerkungen zum Leitlinientext vorgebracht, welche vollständig im Text umgesetzt wurden. Der Vorstand des VDZI enthielt sich, da dessen Mandatsträger an der o.g. Konsensuskonferenz nur als Mandatsträger für andere, ebenfalls dort verabschiedete Leitlinienthemen teilgenommen hatte.

3. Methodische Exaktheit

Recherche nach existierenden Leitlinien

Leitlinienrecherche

Recherche, Auswahl und Bewertung wissenschaftlicher Belege (Evidenzbasierung)

Formulierung einer PICO-Frage

Formulierung von Key-Words auf das zu erwartende Outcome

Priorisierung der Outcomes

Systematische Literaturrecherche

Auswahl der Studien

Formulierung der Empfehlung und strukturierte Konsensfindung (08.09.2015-09.09.2015)

Formale Konsensfindung

Berücksichtigung von Nutzen, Nebenwirkungen-relevanten Outcomes

Formulierung der Empfehlung

3.1. Recherche nach existierenden Leitlinien

Es wurde die International Guidelines Library mit dem Schlagwort bisphosphonate durchsucht. Dabei wurden keine themenbezogenen Leitlinien gefunden.

3.2. Recherche, Auswahl und Bewertung wissenschaftlicher Belege (Evidenzbasierung)

Der Methodik von GRADE folgend wurde zunächst eine PICO-Frage formuliert, um die Selektionskriterien (Suchwörter, Key-Words, Verknüpfungen, Ein- und Ausschlusskriterien) für die Literaturrecherche zu definieren:

„Für welches Subkollektiv der Patienten mit antiresorptiver Therapie erzielt eine Versorgung mit dentalen Implantaten gegenüber dem Verzicht auf dentale Implantate eine Verbesserung der Kaufunktionen und Lebensqualität ohne mit einem unangemessenen ONJ Risiko einherzugehen?“

Um relevante Outcomes und eine folgende Literaturrecherche bei Pubmed anzufertigen, wurden Key-Word Verknüpfungen gebildet.

1. Outcome: ONJ Risiko

- 1.1 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (dental implant OR Periimplantitis)
- 1.2. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND denture
- 1.3. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (jaw augmentation OR sinus lift)
- 1.4. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND antibiotics AND dental implant
- 1.5. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND xerostomia
- 1.6. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND ctx
- 1.7 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND medication time

2. Outcome: Kaufunktion

- 2.1. masticatory efficiency AND dental implant
- 2.2. tmj disorders AND dental implant AND prevention

3. Outcome: Lebensqualität

- 3.1. quality of life AND dental implant AND social eating
- 3.2. oral health related quality of life AND dental implant NOT elderly patients NOT oral cavity cancer

4. Outcome: Prognose der Restbezahnung

- 4.1. prognosis remaining dentition AND dental implant

5. Outcome: zu erwartende Prognose zukünftiger Implantate

- 5.1. dental implant AND prognosis AND (bisphosphonate OR denosumab)
- 5.2. (bisphosphonate OR denosumab) AND persisting alveolar socket
- 5.3. (bisphosphonate OR denosumab) AND sharp bone edges AND jaw NOT children NOT osteogenesis imperfect
- 5.4. (bisphosphonate OR denosumab) AND ossification AND jaw NOT children NOT osteogenesis imperfect
- 5.5. (bisphosphonate OR denosumab) AND bone remodeling AND post extraction AND jaw NOT children NOT osteogenesis imperfect
- 5.6. (bisphosphonate OR denosumab) AND radiologic changes AND jaw NOT children NOT osteogenesis imperfecta

6. Handrecherche / weitere Internetrecherche

Es ergab sich folgende Priorisierung der Outcomes:

Patient	Intervention	Comparativ	Outcome
Antiresorptive Therapie mit Bisphosphonaten oder Denusomab	Dentale Implantate Zum Ersatz von 1 oder >1 Zahn	Verzicht auf (zusätzliche) Implantate durch - keine prothetische Versorgung - oder - feststehende Versorgung mit Brücken auf Zähnen - oder - herausnehmbare "konventionelle" Versorgung ohne (zusätzliche) Implantate	- ONJ Risiko (Beeinflussung des Gesamtrisikos durch Implantate, z.B. durch die Vermeidung von ZE-Druckstellen) - Kaufunktion (inklusive prophylaktische / therapeutische Beeinflussung von Kiefergelenk und Kauorgan) - Lebensqualität (insbesondere durch die Beeinflussung des QoL-Merkmals "Essen in Gesellschaft") - Prognose der Restbezahnung (Beeinflussung dieser z.B. bei der Indikation der Pfeilervermehrung) - zu erwartende Prognose zukünftiger Implantate (unter Berücksichtigung der Implantatprognose durch Grunderkrankung, antiresorptive Therapie und weitere Einflussfaktoren)

Outcome	Relevanz (Zahl von 1 - 9)
ONJ Risiko (Beeinflussung des Gesamtrisikos durch Implantate, z.B. durch die Vermeidung von ZE-Druckstellen)	7,5
Kaufunktion (inklusive prophylaktische / therapeutische Beeinflussung von Kiefergelenk und Kauorgan)	6,3
Lebensqualität (insbesondere durch die Beeinflussung des QoL-Merkmals "Essen in Gesellschaft")	6,3
Prognose der Restbezahnung (Beeinflussung dieser z.B. bei der Indikation der Pfeilervermehrung)	5,6
zu erwartende Prognose zukünftiger Implantate (unter Berücksichtigung der Implantatprognose durch Grunderkrankung, antiresorptive Therapie und weitere Einflussfaktoren)	4,3

Es erfolgte eine systematische Literaturrecherche mit PubMed. Als Suchwörter wurden die oben genannten Key-Word Verknüpfungen gewählt, so dass eine hohe Vollständigkeit zu erzielen war.

In der am 06.06.2015 durchgeführten Literaturrecherche wurden insgesamt 505 Publikationen bei Pubmed gefunden. Zusätzlich erbrachte die Handrecherche weitere 17 Publikationen, die in die Bewertung mit eingebracht wurden. Insgesamt wurden 522 Publikationen in der ersten Literaturrecherche gesichtet (siehe Anhang 1).

Am 10.07.2015 erfolgte ein konstituierendes Treffen ohne Anwesenheit des Methodikers (Prof. Dr. Dr. B. Al-Nawas, Prof. Dr. Dr. K. Grötz, Prof. Dr. Dr. C. Walter). Die Publikationen wurden nach folgenden Kriterien evaluiert: Eingeschlossen wurden retrospektive, prospektive Studien am Menschen sowie Fallserien mit über 10 Patienten.

Bei der Sichtung der Literaturrecherche am 10.07.2015 (Literaturauswahl nach methodischen Kriterien) zeigte sich zu den Punkten 1.6. etc. eine große Zahl von Literaturtreffern, die inhaltlich aber keine Auswertung der Outcomes für die PICO-Frage zuließen. Deshalb war die Recherche in den unten genannten Punkten um die jeweiligen Inhalte der PICO-Frage zu ergänzen.

1.6. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND ctx AND dental Implant -> neue Anzahl an Literaturquellen = 5

1.7 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND medication time AND dental Implant -> neue Anzahl an Literaturquellen = 2

2.1. (bisphosphonate OR denosumab) AND masticatory efficiency AND dental implant -> neue Anzahl = 0

2.2. (bisphosphonate OR denosumab) AND tmj disorders AND dental implant AND prevention -> neue Anzahl = 0

3.1. (bisphosphonate OR denosumab) AND quality of life AND dental implant -> neue Anzahl = 5

3.2. (bisphosphonate OR denosumab) AND oral health related quality of life AND dental implant NOT elderly patients NOT oral cavity cancer -> neue Anzahl = 1

4.1. (bisphosphonate OR denosumab) AND prognosis remaining dentition AND dental implant -> neue Anzahl = 0

5.4. (bisphosphonate OR denosumab) AND ossification AND jaw NOT children NOT osteogenesis imperfect AND dental implant -> neue Anzahl = 9

5.5. (bisphosphonate OR denosumab) AND bone remodeling AND post extraction AND jaw NOT children NOT osteogenesis imperfect AND dental implant -> neue Anzahl = 1

5.6. (bisphosphonate OR denosumab) AND radiologic changes AND jaw NOT children NOT osteogenesis imperfecta AND dental implant -> neue Anzahl = 1

Alle anderen Key-Word Recherche Punkte blieben unverändert. Somit kamen 24 neue Literaturquellen für eine weitere Auswertung in Frage. Insgesamt resultierten nach erneuter methodischer Auswertung aller Key Words Verknüpfungen 50 auszuwertende Literaturstellen inklusive der mittels Handsuche eingefügten Literaturstellen für die Leitlinienerstellung (siehe Anhang 2). Die Evidenztabelle zu diesen Studien sind der zugehörigen Publikation¹ zu entnehmen, die als Anlage den Leitliniendokumenten beigelegt ist.

1. Outcome: ONJ Risiko

- | | | |
|-----|---|------------|
| 1.1 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (dental implant OR Periimplantitis) | Anzahl: 18 |
| 1.2 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND denture | Anzahl: 12 |
| 1.3 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (jaw augmentation OR sinus lift) | Anzahl: 0 |
| 1.4 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND antibiotics AND dental implant | Anzahl: 0 |
| 1.5 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND xerostomia | Anzahl: 0 |
| 1.6 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND ctx | Anzahl: 0 |
| 1.7 | (bisphosphonate OR denosumab) AND osteonecrosis jaw AND medication time | Anzahl: 0 |

¹ Walter C., Al-Nawas B., Wolff T, Schiegnitz E., Grötz KA; Dental implants in patients treated with antiresorptive medication – a systematic literature review; International Journal of Implant Dentistry 2016(2):9; DOI: 10.1186/s40729-016-0041-7

2. Outcome Kaufunktion

- 2.1. masticatory efficiency AND dental implant

Anzahl: 0

- 2.2. tmj disorders AND dental implant AND prevention

Anzahl: 0

3. Outcome Lebensqualität

- 3.1. quality of life AND dental implant

Anzahl: 1

- 3.2. oral health related quality of life AND dental implant NOT elderly patients NOT oral
cavity cancer

Anzahl: 0

4. Outcome Prognose der Restbezahnung

- 4.1. prognosis remaining dentition AND dental implant

Anzahl: 0

5. Outcome: Prognose zukünftiger Implantate

- 5.1. dental implant AND prognosis AND (bisphosphonate OR denosumab)

Anzahl: 0

- 5.2. (bisphosphonate OR denosumab) AND persisting alveolar socket

Anzahl: 2

- 5.3. (bisphosphonate OR denosumab) AND sharp bone edges AND jaw NOT children NOT
osteogenesis imperfect

Anzahl: 0

- 5.4. (bisphosphonate OR denosumab) AND ossification AND jaw NOT children NOT
osteogenesis imperfect

Anzahl: 0

- 5.5. (bisphosphonate OR denosumab) AND bone remodeling AND post extraction AND
jaw NOT children NOT osteogenesis imperfect

Anzahl: 0

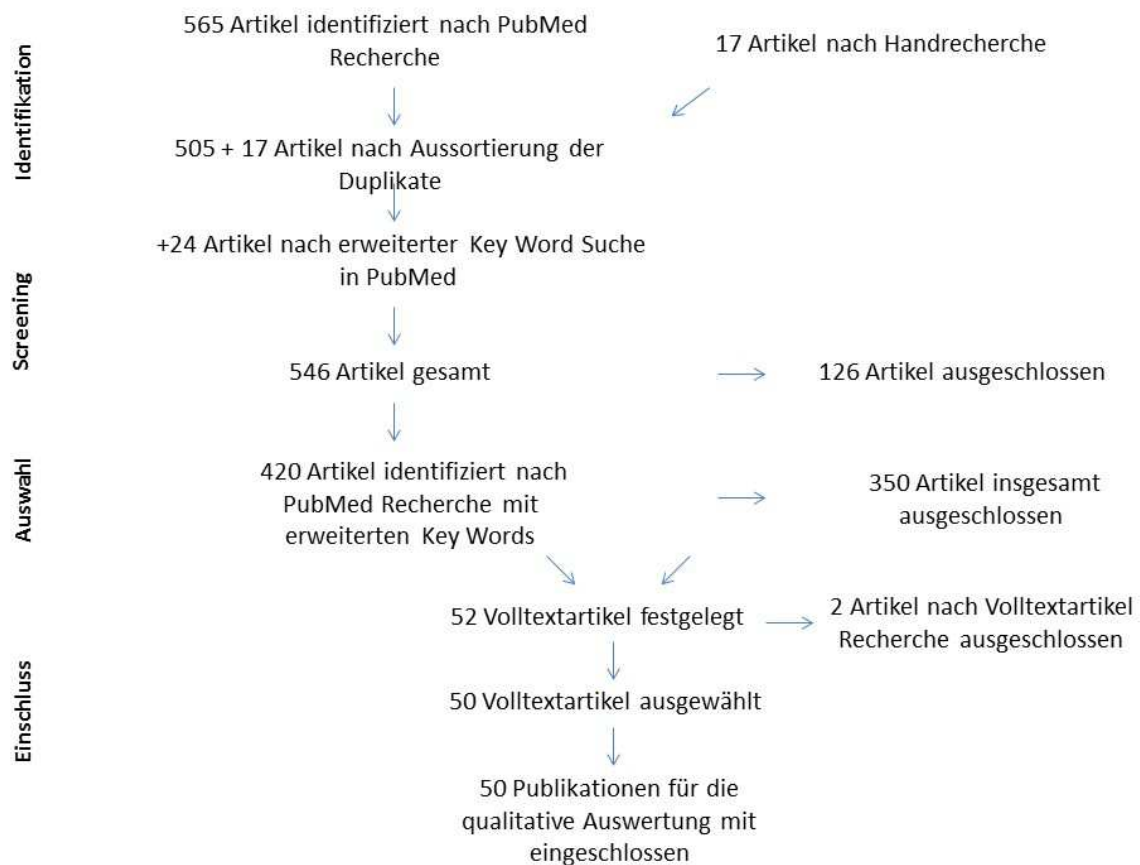
- 5.6. (bisphosphonate OR denosumab) AND radiologic changes AND jaw NOT children NOT
osteogenesis imperfect AND dental implant

Anzahl: 0

6. Handrecherche weitere Internetrecherche

Anzahl: 17

Beigefügt ist das Schaudiagramm zur Literaturrecherche und folgend die 50 Publikationen für die qualitative Auswertung:



3.3. Empfehlungsformulierung

Es wurden Handlungsempfehlungen mit drei unterschiedlichen Empfehlungsgraden formuliert:

„soll“ = Nutzen eindeutig/überwiegt Schaden für die meisten Patienten oder umgekehrt

„sollte“ = Nutzen weniger eindeutig oder relevante Patientengruppen haben keinen Benefit

„kann“ = offen, unklare Evidenz, Einzelfallempfehlung

3.4. Konsensfindung

Die Formulierungen der Empfehlungen und Konsensfindung fanden am 09.09.2015-10.09.2015 in Aachen, Deutschland, im Rahmen einer strukturierten Konsensuskonferenz statt. Die formulierten Statements und Empfehlungen wurden gemäß den Richtlinien der AWMF in Kleingruppen erarbeitet und im Plenum diskutiert sowie abgestimmt (Empfehlungen siehe Leitlinie „Zahnimplantate bei medikamentöser Behandlung mit Knochenantiresorptiva (inkl. Bisphosphonate)“). Im Vorfeld wurden

Ziele, Vorgehensweise, Abstimmungsverfahren und Tagungsort festgelegt und hierzu die Konsentierenden eingeladen.

Am ersten Tag der Konsensuskonferenz wurde analog eines nominalen Gruppenprozesses in Kleingruppen gearbeitet. Die Kleingruppen wurden hierbei jeweils durch zuvor methodisch eingewiesene Moderatoren angeleitet und zeitweilig durch die AWMF-Leitlinienberaterin Frau Prof. Ina Kopp auditiert. Am zweiten Tag erfolgte die Vorstellung und Abstimmung der Leitlinienthemen im Plenum im Rahmen einer strukturierten Konsensuskonferenz, die durch Frau Prof. Kopp neutral und unabhängig moderiert wurde.

Tag 1: Kleingruppe (Nominaler Gruppenprozess):

- Präsentation der zu konsentierenden Aussagen / Empfehlungen
- Möglichkeit zur Stille Notiz: Welcher Empfehlung/Empfehlungsgrad stimmen Sie nicht zu? Ergänzung, Alternative?
- Registrierung der Stellungnahmen im Umlaufverfahren und Zusammenfassung von Kommentaren durch den Moderator
- Vorabstimmung über Diskussion der einzelnen Kommentare – Erstellung einer Rangfolge
- Debattieren / Diskussion der Diskussionspunkte
- Endgültige Abstimmung über jede Empfehlung und alle Alternativen
- Schritte wurden für jede Empfehlung wiederholt

Tag 2: Plenum (Konsensuskonferenz):

- Präsentation der Ergebnisse der Kleingruppendiskussion dem Gesamtplenum von den Gruppensprechern
- Stellungnahmen wurden zur Abstimmung gebracht
- Unterstützung Plenarsitzung durch unabhängige Moderatoren
- Das Ergebnis wurde am Ende der Konferenz festgeschrieben.

Ein Konsens wurde erzielt bei mind. 75% Zustimmung zu einer Empfehlung, dies war für alle abgestimmten Empfehlungen der Fall.

4. Interessenkonflikterklärungen

Die Original-Formulare sind im Sekretariat der DGI hinterlegt.

Name	Vorname	Titel	1*	2*	3*	4*	5*	6*	7*	8*	9*	Bewertung
Al-Nawas	Bilal	Prof. Dr. Dr.	Nein	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	Thematische Relevanz zum Thema Bisphosphonat
Bach	Georg	Dr.	Nein	Nein	Nein	Nein	Ja	Nein	Ja	Nein	Nein	Stimmenthaltung bei Laser vs. Andere therap. Interventionen
Bartsch	Klaus		Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Thematisch Relevanten COI Stimmenthaltung erforderlich
Beck	Jörg	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	keine finanziellen Interessenkonflikte keine Stimmenthaltung
Becker	Jürgen	Prof. Dr.	Nein	Ja	Ja	Ja	Nein	Nein	Ja	Nein	Nein	Ko-Koordinator (Schwarz) --> keine thematisch relevanten COI Thematisch relevante COI --> peer review der Koordinationstätigkeit durch Mitglied der LL-Gruppe ohne fin. COI keine Stimmberechtigung, da Koordinator
Berger	Christian		Nein	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Finanziellen COI Stimmenthaltung erforderlich
Beuer	Florian	Prof. Dr.	Ja	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	Stimmenthaltung bei Fragestellungen zu Implantaten vs. Alternativen Interventionen
Blume	Markus	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	keine thematisch relevanten COI keine Stimmenthaltung erforderlich
Bormann	Kai Hendrik	Prof. Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Keine thematische Relevanz zur LL (LL Behandelt nicht die Differentialindikation Implantate vs. Andere Optionen)

Gómez Román	German	Prof. Dr.	Ja	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Keine thematische Relevanz Keine Stimmenthaltung
Grötz	Knut	Prof. Dr. Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	
Haßfeld	Stefan	Prof. Dr. Dr.	Ja	Ja	Ja	Nein	Ja	Nein	Ja	Nein	Nein	Keine thematische Relevanz Keine Stimmenthaltung
Hoffmann	Jürgen	Prof. Dr. Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Keine thematische Relevanz keine Stimmenthaltung erforderlich
Iglhaut	Gerhard	Dr.	Nein	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	keine thematische Relevanz für die LL- Fragestell. Keine Enthaltung erforderlich
Jakobs	Wolfgang	Dr. Dr.	Nein	Ja	Ja	Nein	Ja	Nein	Ja	Nein	Nein	keine thematische Relevanz zur LL (COI betreffen nur L-Anästhesieverfahren) (LL behandelt nicht die Differentialindikation Implantate vs. Andre Optionen)
Kebschull	Moritz	PD Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Stimmenthaltung bei Fragen um Mundhygiene (e- vs konv. Zahnbürste)
Liepe	Stefan	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	keine finanziellen Interessenkonflikte keine Stimmenthaltung erforderlich
Lux	Christopher	Prof. Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	keinen finanziellen COI keine Stimmenthaltung erforderlich
Mehl	Christian	PD Dr.	Nein	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	Stimmenthaltung bei Fragestellungen zu Implantaten vs. Alternativen Verfahren
Naujokat	Hendrik	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Keine finanziellen COI Keine Stimmenthaltung
Palm	Frank	Dr. Dr.	Ja	Ja	Ja	Nein	Nein	Ja	Nein	Nein	Nein	Stimmenthaltung bei Fragestellungen zu Implantaten vs. Alternativen Verfahren
Ritter	Lutz	PD Dr. Dr.	Ja	Ja	Nein	Ja	Nein	Nein	Ja	Nein	Nein	keine thematisch relevanten COI keine Stimmenthaltung erforderlich

Sader	Robert	Prof. Dr.	Nein	Nein	Ja	Nein	Nein	Nein	Ja	Nein	Nein	Keine thematische Relevanz Keine Stimmenthaltung
Schlee	Markus	Dr.	Ja	Ja	Ja	Ja	Ja	Ja	Ja	Nein	Nein	Stimmenthaltung bei allen formalen Abstimmungen nur als beratender Experte
Schmidt	Joachim	Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Stimmenthaltung bei Fragestellungen zu Implantaten vs. Alternativen Verfahren
Schwarz	Frank	Prof. Dr.	Nein	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	keine thematisch relevanten COI nicht stimmberechtigt (Koordinator)
Sommer	Mathias	Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Keine finanziellen COI Keine Stimmenthaltung
Stiesch	Meike	Prof. Dr.	Nein	Ja	Ja	Nein	Nein	Nein	Nein	Nein	Nein	keine thematisch relevanten COI
Stiller	Michael	PD Dr. Dr.	Ja	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	keine thematisch relevanten COI keine Enthaltung erforderlich
Terheyden	Hendrik	Prof. Dr. Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Koordinator, nicht Stimmberechtigt Peer Review durch ein Mitglied der LL- Gruppe, ohne finanzielle COI
Tetsch	Jan	Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Nein	Nein	Nein	Koordinator, nicht Stimmberechtigt Peer Review durch ein Mitglied der LL- Gruppe, ohne finanzielle COI
Ullner	Martin	Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Keine Stimmberechtigung (Koordinator) Ko-Koordinator (Tim Wolf) ohne finanzielle COI
Wagner	Wilfried	Prof. Dr.	Ja	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	
Walter	Christian	Prof. Dr. Dr.	Nein	Ja	Nein	Nein	Ja	Nein	Ja	Nein	Nein	geringfügige Relevanz (<1000 € für Vorträge) keine Stimmenthaltung
Wiegner	Jörg Ulf	Dr.	Nein	Ja	Nein	Nein	Nein	Nein	Ja	Nein	Nein	Keine thematische Relevanz zur LL (LL Behandelt nicht die Differentialindikation Implantate vs. Andere Optionen)

Wiltfang	Jörg	Prof. Dr. Dr.	Ja	Ja	Ja	Nein	Nein	Nein	Ja	Nein	Nein	Keine direkten finanziellen Interessenkonflikte keine Stimmenthaltung
Wolf	Thomas	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Ja	Ja	Nein	keine finanziellen Interessenkonflikte keine direkten finanziellen COI keine Stimmenthaltung
Wolff	Tim	Dr.	Nein	Nein	Nein	Nein	Nein	Nein	Ja	Nein	Nein	kein Stimmrecht
1. Berater- bzw. Gutachtertätigkeit oder bezahlte Mitarbeit in einem wissenschaftlichen Beirat eines Unternehmens der Gesundheitswirtschaft (z.B. Arzneimittelindustrie, Medizinproduktindustrie), eines kommerziell orientierten Auftragsinstituts oder einer Versicherung 2. Honorare für Vortrags- und Schulungstätigkeiten oder bezahlte Autoren- oder Co-Autorenschaften im Auftrag eines Unternehmens der Gesundheitswirtschaft, eines kommerziell orientierten Auftragsinstituts oder einer Versicherung 3. Finanzielle Zuwendungen (Drittmittel) für Forschungsvorhaben oder direkte Finanzierung von Mitarbeitern der Einrichtung von Seiten eines Unternehmens der Gesundheitswirtschaft, eines kommerziell orientierten Auftragsinstituts oder einer Versicherung 4. Eigentümerinteresse an Arzneimitteln/Medizinprodukten (z. B. Patent, Urheberrecht, Verkaufslizenz) 5. Besitz von Geschäftsanteilen, Aktien, Fonds mit Beteiligung von Unternehmen der Gesundheitswirtschaft 6. Persönliche Beziehungen zu einem Vertretungsberechtigten eines Unternehmens Gesundheitswirtschaft 7. Mitglied von in Zusammenhang mit der Leitlinienentwicklung relevanten Fachgesellschaften/Berufsverbänden, Mandatsträger im Rahmen der Leitlinienentwicklung 8. Politische, akademische (z.B. Zugehörigkeit zu bestimmten „Schulen“), wissenschaftliche oder persönliche Interessen, die mögliche Konflikte begründen könnten 9. Gegenwärtiger Arbeitgeber, relevante frühere Arbeitgeber der letzten 3 Jahre												

Anhang 1: Ergebnis der ersten Literaturrecherche

1. Outcome: ONJ Risiko

1.1 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (dental implant OR Periimplantitis)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe	Doppelt vorhanden
1	25956267	Matsuo A	2015	Evaluation of dental implants as a risk factor for the development of bisphosphonate-related osteonecrosis of the jaw in breast cancer patients.	Odontology.	Retrospective Fallserie	-	
2	25764480	Al-Sabbagh M	2015	Osteoporosis and bisphosphonate-related osteonecrosis in a dental school implant patient population.	Implant Dent.	Retrospective Fallserie	+	
3	25734949	Doh RM	2015	Teriparatide therapy for bisphosphonate-related osteonecrosis of the jaw associated with dental implants.	Implant Dent.	Narratives Review / Case Report	-	
4	25701305	Nisi M	2015	Risk factors influencing BRONJ staging in patients receiving intravenous bisphosphonates: a multivariate analysis.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
5	25639776	Boquete-Castro A	2015	Denosumab and osteonecrosis of the jaw. A systematic analysis of events reported in clinical trials.	Clin Oral Implants Res.	Systematisches Review / Meta Analyse	+	
6	25327450	Fernández Ayora A	2015	Dramatic osteonecrosis of the jaw associated with oral bisphosphonates, periodontitis, and dental implant removal.	J Clin Periodontol.	Narratives Review / Case Report	-	
7	25234534	Holzinger D	2014	Effect of dental implants on bisphosphonate-related osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
8	24784521	Lin WS	2014	CAD/CAM-fabricated telescopic prostheses on	Gen Dent.	Case Report	-	

				periodontally compromised abutments of a patient undergoing intravenous bisphosphonate treatment for osteoporosis: a case report.				
9	24665825	Petropoulos VC	2014	Treatment of a Patient with Implant Failure and Jaw Osteonecrosis: Successful Retreatment Using Implants.	J Oral Implantol.	Case Report	-	
10	24665168	Gupta S	2013	Bisphosphonates related osteonecrosis of the jaw.	Natl J Maxillofac Surg.	Systematisches Review	-	
11	24593250	Rugani P	2014	Implant placement adjacent to successfully treated Bisphosphonate-related osteonecrosis of the jaw (BRONJ).	J Oral Implantol.	Case Report	-	
12	24420526	Borm JM	2013	[Risk assessment in patients undergoing osseous antiresorptive therapy in dentistry. An update].	Schweiz Monatsschr Zahnmed.	Case Reports	-	
13	24168902	Kim JW	2014	Bisphosphonate-related osteonecrosis of the jaw at a previously grafted sinus.	Implant Dent.	Case Report	-	
14	23964780	Chadha GK	2013	Osseointegration of dental implants and osteonecrosis of the jaw in patients treated with bisphosphonate therapy: a systematic review.	J Oral Implantol.	Systematisches Review	-	
15	23920073	Pasoff M	2013	C-terminal cross-linking telopeptide as a serologic marker for bisphosphonate-related osteonecrosis of the jaw: review of 2 cases.	J Can Dent Assoc.	Cese Reports	-	
16	23866309	López-Cedrún JL	2013	Oral bisphosphonate-related osteonecrosis of the jaws in dental implant patients: a case series.	Br J Oral Maxillofac Surg.	Retrospektive Multycenter Fallserie	+	
17	23763951	Albanese A	2013	Platelet-rich plasma (PRP) in dental and oral surgery: from the wound healing to bone regeneration.	Immun Ageing.	Narratives Review	-	
18	23763726	Mattheos N	2013	Dental implant placement with bone augmentation in a patient who received intravenous bisphosphonate treatment for osteoporosis.	J Can Dent Assoc.	Case Report	-	

19	23664688	Bascones-Martínez A	2013	[Oral secondary effects of radiotherapy and chemotherapy in cancer of the cervicofacial region].	Med Clin (Barc.)	Narratives Review	-	
20	23445465	Tam Y	2014	Osteonecrosis of the jaw after implant surgery in patients treated with bisphosphonates--a presentation of six consecutive cases.	Clin Implant Dent Relat Res.	Case Reports	+	
21	23294978	Boffano P	2013	Pathological mandibular fractures: a review of the literature of the last two decades.	Dent Traumatol.	Narratives Review	-	
22	23278625	Kwon TG	2014	Osteonecrosis associated with dental implants in patients undergoing bisphosphonate treatment.	Clin Oral Implants Res.	Retrospektive Fallserie	+	
23	25737876	Kalra S	2013	Dental complications and management of patients on bisphosphonate therapy: A review article.	J Oral Biol Craniofac Res.	Narratives Review	-	
24	23264610	Abtahi J	2013	Effect of local vs. systemic bisphosphonate delivery on dental implant fixation in a model of osteonecrosis of the jaw.	J Dent Res.	Tierexperimentelle Studie	-	
25	23075811	Sverzut CE	2012	Mandibular bisphosphonate-related osteonecrosis after dental implant rehabilitation: a case report.	Implant Dent.	Case Report	-	
26	23021595	Annussek T	2012	Short time administration of antirheumatic drugs - methotrexate as a strong inhibitor of osteoblast's proliferation in vitro.	Head Face Med.	In-Vitro Studie	-	
27	22945738	Gupta R	2012	Early dental implant failure in patient associated with oral bisphosphonates.	Indian J Dent Res.	Case Report	-	
28	22924366	Zadik Y	2012	The importance of a thorough medical and pharmacological history before dental implant placement.	Aust Dent J.	Case Report	-	
29	22892237	Holzinger D	2013	Long-term success of surgery in bisphosphonate-related osteonecrosis of the jaws (BRONJs).	Oral Oncol.	Retrospektive Fallserie	-	
30	22524823	Kim BC	2012	Mandibular reconstruction with vascularized osseous	Asian Pac J Cancer Prev.	Narratives Review	-	

				free flaps: a review of the literature.				
31	22507063	Otomo-Corgel J	2012	Osteoporosis and osteopenia: implications for periodontal and implant therapy.	Periodontol 2000.	Narratives Review	-	
32	22506684	Chadha GK	2012	Osseointegration of dental implants and osteonecrosis of the jaw in patients treated with bisphosphonate therapy: A systematic review.	J Oral Implantol.	Systematisches Review	-	
33	22486711	Saldanha S	2012	Dental implications of bisphosphonate-related osteonecrosis.	Gerodontology.	Narratives Review	-	
34	22415216	Jacobsen C	2013	Osteopathology induced by bisphosphonates and dental implants: clinical observations.	Clin Oral Investig.	Retrospektive Fallserie	+	
35	22376948	Conte-Neto N	2012	Epidemiological aspects of rheumatoid arthritis patients affected by oral bisphosphonate-related osteonecrosis of the jaws.	Head Face Med.	Narratives Review / Literatur Review	-	
36	24558532	Flichy-Fernández AJ	2012	Bone necrosis around dental implants: A patient treated with oral bisphosphonates, drug holiday and no risk according to serum CTX.	J Clin Exp Dent.	Case Report	-	
37	22257870	Zadik Y	2012	Painful trigeminal neuropathy induced by oral bisphosphonate-related osteonecrosis of the jaw: a new etiology for the numb-chin syndrome.	Quintessence Int.	Case Report	-	
38	22228462	Yuan K	2012	Dental implant failure associated with bacterial infection and long-term bisphosphonate usage: a case report.	Implant Dent.	Case Report	-	
39	22201102	Tanaka S	2012	[Potential use of parathyroid hormone (PTH) in the treatments for oral diseases].	Clin Calcium.	Narratives Review	-	
40	22133390	Stewart DL	2011	Prosthetic treatment of a patient taking nitrogen-containing bisphosphonates to preserve the integrity of the epithelial attachment: a clinical report.	J Prosthet Dent.	Case Report	-	
41	22126353	Liddelow G	2011	Patient-related risk factors for implant therapy. A	Aust Dent J.	Systematisches Review	-	

				critique of pertinent literature.				
42	22091898	Shannon J	2011	Bisphosphonates and osteonecrosis of the jaw.	J Am Geriatr Soc.	Narratives Review	-	
43	22041409	Hellstein JW	2011	Managing the care of patients receiving antiresorptive therapy for prevention and treatment of osteoporosis: executive summary of recommendations from the American Dental Association Council on Scientific Affairs.	J Am Dent Assoc.	Narratives Review	-	
44	21883630	Tripathi A	2011	Bisphosphonate therapy for skeletal malignancies and metastases: impact on jaw bones and prosthodontic concerns.	J Prosthodont.	Narratives Review	-	
45	21882508	Verbruggen KH	2011	[Placing of oral implants in patients using bisphosphonates].	Ned Tijdschr Tandheelkd.	Narratives Review	-	
46	21881516	Lee CY	2011	Identification and treatment of bisphosphonate-associated actinomycotic osteonecrosis of the jaws.	Implant Dent.	Narratives Review	-	
47	23738968	Famili P	2011	Survival of dental implants among post-menopausal female dental school patients taking oral bisphosphonates: a retrospective study.	Compend Contin Educ Dent.	Retrospektive Fallserie	+	
48	21486510	Franken AA	2011	[Bisphosphonate-related osteonecrosis of the jaw].	Ned Tijdschr Geneesk.	Narratives Review	-	
49	21477374	Borromeo GL	2011	Is bisphosphonate therapy for benign bone disease associated with impaired dental healing? A case-controlled study.	BMC Musculoskelet Disord.	Prospektive kontrollierte klinische Studie	-	
50	21440820	Fleisher KE	2011	Risk factors for bisphosphonate-related osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Narratives Review / Letter	-	
51	21425753	Garg A	2011	Study investigates novel approach to bone loss in the jaw.	Dent Implantol Update.	Case Report	-	
52	22567443	Junquera L	2011	Multiple myeloma and bisphosphonate-related osteonecrosis of the mandible associated with dental	Case Rep Dent.	Case Report	-	

				implants.				
53	21163625	Manfredi M	2011	Bisphosphonate-related osteonecrosis of the jaws: a case series of 25 patients affected by osteoporosis.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
54	21122971	Huja SS	2011	Effects of short-term zoledronic acid treatment on bone remodeling and healing at surgical sites in the maxilla and mandible of aged dogs.	J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
55	21119471	Goiato MC	2010	Care required when using bisphosphonates in dental surgical practice.	J Craniofac Surg.	Narratives Review	-	
56	20949756	de Souza Loureiro CC	2010	Advantages and disadvantages of the use of bisphosphonates in oral and maxillofacial surgery.	Int Dent J.	Narratives Review	-	
57	20946206	Kwon YD	2011	Retrospective study of two biochemical markers for the risk assessment of oral bisphosphonate-related osteonecrosis of the jaws: can they be utilized as risk markers?	Clin Oral Implants Res.	Retrospektive Fallserie	+	
58	20561470	Bedogni A	2010	Oral bisphosphonate-associated osteonecrosis of the jaw after implant surgery: a case report and literature review.	J Oral Maxillofac Surg.	Case Report	-	
59	20498766	Shin EY	2010	Implant failure associated with oral bisphosphonate-related osteonecrosis of the jaw.	J Periodontal Implant Sci.	Case Report	-	
60	20434422	Koka S	2010	Survival of dental implants in post-menopausal bisphosphonate users.	J Prosthodont Res.	Retrospektive Fallserie	+	
61	20415805	Narongroeknawin P	2010	Bisphosphonate-associated osteonecrosis of the jaw, with healing after teriparatide: a review of the literature and a case report.	Spec Care Dentist.	Case Report / Narratives Review	-	
62	20399289	Kassolis JD	2010	Histopathologic findings in bone from edentulous alveolar ridges: a role in osteonecrosis of the jaws?	Bone.	Retrospektive Fallserie	-	
63	20367090	Javed F	2010	Osseointegration of dental implants in patients	J Periodontol.	Systematisches Review	-	

				undergoing bisphosphonate treatment: a literature review.				
64	20307764	Lazarovici TS	2010	Bisphosphonate-related osteonecrosis of the jaw associated with dental implants.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
65	20116705	Goss A	2010	The nature and frequency of bisphosphonate-associated osteonecrosis of the jaws in dental implant patients: a South Australian case series.	J Oral Maxillofac Surg.	Case Reports	+	
66	20095203	Koka S	2009	Osteoporosis, fracture risk, and prosthodontic implications.	Int J Prosthodont.	Narratives Review	-	
67	20072741	El-Halaby A	2009	Autogenous bone grafting in a patient on long-term oral bisphosphonate therapy: case report.	Int J Periodontics Restorative Dent.	Case Report	-	
68	19793318	Shirotu T	2009	Bisphosphonate-related osteonecrosis of the jaw around dental implants in the maxilla: report of a case.	Clin Oral Implants Res.	Case Report	-	
69	19772941	Lo JC	2010	Prevalence of osteonecrosis of the jaw in patients with oral bisphosphonate exposure.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
70	19767707	Montoya-Carralero JM	2010	Dental implants in patients treated with oral bisphosphonates: a bibliographic review.	Med Oral Patol Oral Cir Bucal.	Narratives Review	-	
71	19767691	Mellado-Valero A	2010	Implant treatment in patients with osteoporosis.	Med Oral Patol Oral Cir Bucal.	Narratives Review	-	
72	19753815	Bourgeois SL Jr	2009	Bisphosphonate medications--the good, the bad, and the ugly.	Tex Dent J.	Narratives Review	-	
73	19681933	Favia G	2011	Osteonecrosis of the posterior mandible after implant insertion: a clinical and histological case report.	Clin Implant Dent Relat Res.	Case Report	-	
74	19663954	Madrid C	2009	What impact do systemically administered bisphosphonates have on oral implant therapy? A systematic review.	Clin Oral Implants Res.	Systematisches Review	-	
75	19570696	Siddiqi A	2009	Bisphosphonate-induced osteonecrosis of the jaw: a	Oral Surg Oral Med Oral	Narratives Review	-	

				medical enigma?	Pathol Oral Radiol Endod.			
76	19561566	Flichy-Fernández AJ	2009	Bisphosphonates and dental implants: current problems.	Med Oral Patol Oral Cir Bucal.	Narratives Review	-	
77	19537656	Pirih FQ	2009	Case report of implant placement in a patient with Paget's disease on bisphosphonate therapy.	J Mich Dent Assoc.	Case Report	-	
78	19446233	McLeod NM	2009	Oral bisphosphonates and dental implants.	J Oral Maxillofac Surg.	Letter / Comment	-	
79	19371821	Marx RE	2009	Reconstruction of defects caused by bisphosphonate-induced osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Narratives Review	-	
80	19371813	Assael LA	2009	Oral bisphosphonates as a cause of bisphosphonate-related osteonecrosis of the jaws: clinical findings, assessment of risks, and preventive strategies.	J Oral Maxillofac Surg.	Narratives Review	-	
81	19217014	Torres J	2009	Dental implants in a patient with Paget disease under bisphosphonate treatment: a case report.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Case Report	-	
82	19212230	Kraut RA	2009	Current therapy: a moving target.	Implant Dent.	Letter / Editorial	-	
83	19122270	Urade M	2009	[New development in bisphosphonate treatment. Bisphosphonate therapy and osteonecrosis of the jaws].	Clin Calcium.	Narratives Review	-	
84	19071040	Alons K	2009	Treating low- and medium-potency bisphosphonate-related osteonecrosis of the jaws with a protocol for the treatment of chronic suppurative osteomyelitis: report of 7 cases.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Case Reports	-	
85	19047674	Edwards BJ	2008	Updated recommendations for managing the care of patients receiving oral bisphosphonate therapy: an advisory statement from the American Dental Association Council on Scientific Affairs.	J Am Dent Assoc.	Letter	-	
86	18807554	Marx RE	2008	Editorial opinion versus real data and knowledge of the	Int J Oral Maxillofac	Editorial	-	

				literature.	Implants.			
87	18797941	Pigrau C	2009	Osteomyelitis of the jaw: resistance to clindamycin in patients with prior antibiotics exposure.	Eur J Clin Microbiol Infect Dis.	Retrospektive Fallserie	-	
88	18789194	Dai M	2008	Point of care.	J Can Dent Assoc.	Narratives Review	-	
89	18683394	Wynn RL	2008	Do Fosamax-type drugs increase the risk of osteonecrosis of the jaw for patients receiving dental implants?	Gen Dent.	Narratives Review	-	
90	18423296	Bell BM	2008	Oral bisphosphonates and dental implants: a retrospective study.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
91	18423292	Ferrari S	2008	Fibula free flap with endosseous implants for reconstructing a resected mandible in bisphosphonate osteonecrosis.	J Oral Maxillofac Surg.	Case Report	-	
92	18380548	Elad S	2008	Re: Fugazzotto PA, Lightfoot WS, Jaffin R, Kumar A.(J Periodontol 2007; 78: 1664-1669).	J Periodontol.	Letter	-	
93	18363257	Phillips G	2007-2008	Bisphosphonate therapy and dental treatment.	J Indiana Dent Assoc.	Narratives Review	-	
94	18201600	Grant BT	2008	Outcomes of placing dental implants in patients taking oral bisphosphonates: a review of 115 cases.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
95	17880759	Berardi D	2007	Potential applications of biphosphonates in dental surgical implants.	Int J Immunopathol Pharmacol.	Narratives Review	-	
96	17760533	Fugazzotto PA	2007	Implant placement with or without simultaneous tooth extraction in patients taking oral bisphosphonates: postoperative healing, early follow-up, and the incidence of complications in two private practices.	J Periodontol.	Retrospektive Fallserie	+	
97	17335384	Wang HL	2007	Effect of long-term oral bisphosphonates on implant wound healing: literature review and a case report.	J Periodontol.	Narratives Review / Case Report	-	
98	17335360	Otomo-Corgel J	2007	Implants and oral bisphosphonates: risky business?	J Periodontol.	Letter / Comment	-	

99	17272882	Urade M	2007	[Bisphosphonates and osteonecrosis of the jaws].	Clin Calcium.	Narratives Review	-	
100	17223592	Brooks JK	2007	Osteonecrosis of the jaws associated with use of risedronate: report of 2 new cases.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Case Reports	-	
101	17066981	Garg AK	2006	Bisphosphonates and avascular necrosis of alveolar bone: a potential threat to dental implants.	Dent Implantol Update.	Narratives Review	-	
102	16966893	Scully C	2006	Dental endosseous implants in patients on bisphosphonate therapy.	Implant Dent.	Narratives Review	-	
103	16960697	Piesold JU	2006	[Osteonecrosis of the jaws by long term therapy with bisphosphonates].	Mund Kiefer Gesichtschir.	Narratives Review	-	
104	16796276	Jeffcoat MK	2006	Safety of oral bisphosphonates: controlled studies on alveolar bone.	Int J Oral Maxillofac Implants.	Randomisierte kontrollierte klinische Studie	+	
105	16243172	Marx RE	2005	Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis) of the jaws: risk factors, recognition, prevention, and treatment.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	

1.2. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND denture

NR.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
106	25860198	Koy S	2015	[Bisphosphonate-associated osteonecrosis of the jaw].	Schmerz.	Retrospektive Fallserie	-	
107	25414052	Khan AA	2015	Diagnosis and management of osteonecrosis of the jaw: a systematic review and international consensus.	J Bone Miner Res.	Systematisches Review	-	
108	25212129	Niibe K	2015	Osteonecrosis of the jaw in patients with dental	J Prosthodont Res.	Letter	+	

				prostheses being treated with bisphosphonates or denosumab.				
109	24954080	de Almeida FC	2014	New uses for rehabilitation protocol for oral sinus communications in ARONJ patients.	J Prosthodont.	Case Report	-	
110	23928436	Damm DD	2013	Bisphosphonate-related osteonecrosis of the jaws: a potential alternative to drug holidays.	Gen Dent.	Case Report	-	
111	23204084	Smidt A	2012	Forced eruption as an alternative to tooth extraction in long-term use of oral bisphosphonates: review, risks and technique.	J Am Dent Assoc.	Case Reports	-	
25				Mandibular bisphosphonate-related osteonecrosis after dental implant rehabilitation: a case report.	Implant Dent.		-	X in 1.1
29				Long-term success of surgery in bisphosphonate-related osteonecrosis of the jaws (BRONJs).	Oral Oncol.		-	X in 1.1
112	22862971	Hasegawa Y	2012	Influence of dentures in the initial occurrence site on the prognosis of bisphosphonate-related osteonecrosis of the jaws: a retrospective study.	Oral Surg Oral Med Oral Pathol Oral Radiol.	Retrospektive Fallserie	+	
113	22704590	Jabbour Z	2012	The outcomes of conservative and surgical treatment of stage 2 bisphosphonate-related osteonecrosis of the jaws: a case series.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
40				Prosthetic treatment of a patient taking nitrogen-containing bisphosphonates to preserve the integrity of the epithelial attachment: a clinical report.	J Prosthet Dent.		-	X in 1.1
114	21539523	Lo JC	2011	Oral health considerations in older women receiving oral bisphosphonate therapy.	J Am Geriatr Soc.	Retrospektive Kohortenstudie	-	
115	21510356	Alloh Amichia YC	2010	[Prosthetic rehabilitation after osteonecrosis of the jaws due to histiocytosis X and treatment with	Odontostomatol Trop.	Case Reports	-	

				bisphosphonates apropos of a case].				
49				Is bisphosphonate therapy for benign bone disease associated with impaired dental healing? A case-controlled study.	BMC Musculoskelet Disord.		-	X in 1.1
53				Bisphosphonate-related osteonecrosis of the jaws: a case series of 25 patients affected by osteoporosis.	Int J Oral Maxillofac Surg.		-	X in 1.1
116	21140589	Kyrgidis A	2010	Root canal therapy for the prevention of osteonecrosis of the jaws: an evidence-based clinical update.	Aust Endod J.	Narratives Review	-	
117	21122968	Hoefert S	2011	Relevance of a prolonged preoperative antibiotic regime in the treatment of bisphosphonate-related osteonecrosis of the jaw.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
118	20522142	Kyrgidis A	2010	The role of dental hygienist in the prevention of osteonecrosis of the jaw in patients wearing dentures.	Int J Dent Hyg.	Comment / Letter	-	
119	20452814	Madrid C	2010	Bisphosphonate-related osteonecrosis of the jaws: how to manage cancer patients.	Oral Oncol.	Narratives Review	-	
120	20437036	Crépin S	2010	Osteonecrosis of the jaw induced by clodronate, an alkylbiphosphonate: case report and literature review.	Eur J Clin Pharmacol.	Systematisches Review / Case Report	-	
121	20362762	Göllner M	2010	Prosthetic treatment of a patient with bisphosphonate-induced osteonecrosis of the jaw using a removable dental prosthesis with a heat-polymerized resilient liner: a clinical report.	J Prosthet Dent.	Case Report	-	
122	19805682	Vahtsevanos K	2009	Longitudinal cohort study of risk factors in cancer patients of bisphosphonate-related osteonecrosis of the jaw.	J Clin Oncol.	Retrospektive Kohortenstudie	+	
123	19797544	Kyrgidis A	2009	Osteonecrosis of the jaw.	J Am Dent Assoc.	Comment / Letter	-	

124	19592261	Kos M	2010	Bisphosphonate-related osteonecrosis of the jaws: a review of 34 cases and evaluation of risk.	J Craniomaxillofac Surg.	Retrospektive Fallserie	+	
125	19495814	Rustemeyer J	2010	Bisphosphonate-associated osteonecrosis of the jaw: what do we currently know? A survey of knowledge given in the recent literature.	Clin Oral Investig.	Narratives Review	-	
126	19446234	Kyrgidis A	2009	Increased risk for bisphosphonate-related osteonecrosis of the jaws in patients wearing dentures could be attributable to impaired mucosal cell wound healing.	J Oral Maxillofac Surg.	Comment / Letter	-	
127	19410063	Takagi Y	2009	Osteonecrosis associated with short-term oral administration of bisphosphonate.	J Prosthet Dent.	Case Report	-	
				Dental implants in a patient with Paget disease under bisphosphonate treatment: a case report.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.			X in 1.1
128	19138190	Barrow SY	2008	Is your knowledge up-to-date? Bisphosphonate-related osteonecrosis of the jaw.	Int J Dent Hyg.	Case Report	-	
129	19114948	Kyrgidis A	2009	Letter to the editor: novel evidence on bisphosphonate related osteochemonecrosis of the jaws suggests tooth extractions and overdentures as risk factors.	Med Oral Patol Oral Cir Bucal.	Comment / Letter	-	
130	18801674	Carmagnola D	2008	Dental and periodontal history of oncologic patients on parenteral bisphosphonates with or without osteonecrosis of the jaws: a pilot study.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Retrospektive Fallserie	+	
88				Point of care.	J Can Dent Assoc.		-	X in 1.1
131	18703870	Barragan-Adjemian C	2009	Bisphosphonate-related osteonecrosis of the jaw: model and diagnosis with cone beam computerized tomography.	Cells Tissues Organs.	Retrospektive Fallserie	-	
132	18602738	Walter C	2008	Prevalence and risk factors of bisphosphonate-associated osteonecrosis of the jaw in prostate cancer patients with advanced disease treated with	Eur Urol.	Retrospektive Fallserie	+	

				zoledronate.				
133	18574158	Kyrgidis A	2008	Bisphosphonate-related osteonecrosis of the jaws: a case-control study of risk factors in breast cancer patients.	J Clin Oncol.	Retrospektive Fallserie	+	
134	18460263	Sambrook PN	2008	Osteonecrosis of the jaw.	Curr Rheumatol Rep.	Narratives Review	-	
135	18364618	Watts NB	2008	Osteonecrosis of the jaw.	South Med J.	Narratives Review	-	
136	18248160	Vescovi P	2008	Nd:YAG laser biostimulation in the treatment of bisphosphonate-associated osteonecrosis of the jaw: clinical experience in 28 cases.	Photomed Laser Surg.	Retrospektive Fallserie	+	
137	18176650	Kumar SK	2008	Osteonecrosis of the jaws secondary to bisphosphonate therapy: a case series.	J Contemp Dent Pract.	Case Report	+	
138	17785387	Levin L	2007	Denture-related osteonecrosis of the maxilla associated with oral bisphosphonate treatment.	J Am Dent Assoc.	Case Report	-	
139	17598065	Yarom N	2007	Osteonecrosis of the jaw induced by orally administered bisphosphonates: incidence, clinical features, predisposing factors and treatment outcome.	Osteoporos Int.	Retrospektive Multicenter Studie	+	
140	17572168	Reid IR	2007	Is bisphosphonate-associated osteonecrosis of the jaw caused by soft tissue toxicity?	Bone.	Editorial / Narratives Review	-	
141	22460753	Borgioli A	2007	Bisphosphonate-related osteonecrosis of the jaw: the Florence experience.	Clin Cases Miner Bone Metab.	Retrospektive Fallserie	+	
103				[Osteonecrosis of the jaws by long term therapy with bisphosphonates].	Mund Kiefer Gesichtschir.		-	X in 1.1
142	16941133	Walter C	2007	Prevalence of bisphosphonate associated osteonecrosis of the jaw within the field of osteonecrosis.	Support Care Cancer.	Retrospektive Fallserie	+	
143	16872925	Marunick M	2006	Prosthetic treatment during active osteonecrosis related to radiation and bisphosphonate therapy: a clinical report.	J Prosthet Dent.	Case Report	-	

144	16416712	Cheng A	2005	The dental implications of bisphosphonates and bone disease.	Aust Dent J.	Case Report / Narratives Review	-	
145	16314620	Bamias A	2005	Osteonecrosis of the jaw in cancer after treatment with bisphosphonates: incidence and risk factors.	J Clin Oncol.	Retrospektive Fallserie	+	
146	9922427	Bouquot JE	1999	Ischemic osteonecrosis under fixed partial denture pontics: radiographic and microscopic features in 38 patients with chronic pain.	J Prosthet Dent.	Retrospektive Fallserie	-	

1.3. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (jaw augmentation OR sinus lift)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
147	24369277	Takeuchi Y	2014	[Progress and problems in oral bisphosphonate].	Clin Calcium.	Narratives Review	-	
148	24327103	Yamada Y	2014	Current trends in stem cell therapy for improvement of bone quality.	Histol Histopathol.	Narratives Review	-	
				Bisphosphonate-related osteonecrosis of the jaw at a previously grafted sinus.	Implant Dent.		-	X in 1.1
				Dental implant placement with bone augmentation in a patient who received intravenous bisphosphonate treatment for osteoporosis.	J Can Dent Assoc.		-	X in 1.1
				Autogenous bone grafting in a patient on long-term oral bisphosphonate therapy: case report.	Int J Periodontics Restorative Dent.		-	X in 1.1
				Current therapy: a moving target.	Implant Dent.		-	X in 1.1
149	19063908	Deng X	2009	Alendronate augments interleukin-1beta release from macrophages infected with periodontal pathogenic	Toxicol Appl Pharmacol.	In Vitro Studie / Narratives Review	-	

				bacteria through activation of caspase-1.				
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1.4. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND antibiotics AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
23				Dental complications and management of patients on bisphosphonate therapy: A review article.	J Oral Biol Craniofac Res.		-	X in 1.1
29				Long-term success of surgery in bisphosphonate-related osteonecrosis of the jaws (BRONJs).	Oral Oncol.		-	X in 1.1
34				Osteopathology induced by bisphosphonates and dental implants: clinical observations.	Clin Oral Investig.		-	X in 1.1
38				Dental implant failure associated with bacterial infection and long-term bisphosphonate usage: a case report.	Implant Dent.		-	X in 1.1
42				Bisphosphonates and osteonecrosis of the jaw.	J Am Geriatr Soc.		-	X in 1.1
46				Identification and treatment of bisphosphonate-associated actinomycotic osteonecrosis of the jaws.	Implant Dent.		-	X in 1.1
53				Bisphosphonate-related osteonecrosis of the jaws: a case series of 25 patients affected by osteoporosis.	Int J Oral Maxillofac Surg.		-	X in 1.1
58				Oral bisphosphonate-associated osteonecrosis of the jaw after implant surgery: a case report and literature review.	J Oral Maxillofac Surg.		-	X in 1.1
59				Implant failure associated with oral bisphosphonate-related osteonecrosis of the jaw.	J Periodontal Implant Sci.		-	X in 1.1
64				Bisphosphonate-related osteonecrosis of the jaw associated with dental implants.	J Oral Maxillofac Surg.		-	X in 1.1

83				[New development in bisphosphonate treatment. Bisphosphonate therapy and osteonecrosis of the jaws].	Clin Calcium.		-	X in 1.1
84				Treating low- and medium-potency bisphosphonate-related osteonecrosis of the jaws with a protocol for the treatment of chronic suppurative osteomyelitis: report of 7 cases.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.		-	X in 1.1
87				Osteomyelitis of the jaw: resistance to clindamycin in patients with prior antibiotics exposure.	Eur J Clin Microbiol Infect Dis.		-	X in 1.1
97				Effect of long-term oral bisphosphonates on implant wound healing: literature review and a case report.	J Periodontol.		-	X in 1.1
100				Osteonecrosis of the jaws associated with use of risedronate: report of 2 new cases.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.		-	X in 1.1
105				Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis) of the jaws: risk factors, recognition, prevention, and treatment.	J Oral Maxillofac Surg.		-	X in 1.1

1.5. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND xerostomia

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
19				[Oral secondary effects of radiotherapy and chemotherapy in cancer of the cervicofacial region].	Narratives Review		-	X in 1.1

150	22434497	Wilberg P	2012	Oral health is an important issue in end-of-life cancer care.	Support Care Cancer.	Retrospektive Fallserie	-	
151	21764202	Vestergaard P	2012	Oral bisphosphonate use increases the risk for inflammatory jaw disease: a cohort study.	J Oral Maxillofac Surg.	Retrospektive Cohortenstudie	-	
152	20306090	Brennan MT	2010	Systematic reviews of oral complications from cancer therapies, Oral Care Study Group, MASCC/ISOO: methodology and quality of the literature.	Support Care Cancer.	Systematisches Review	-	

1.6. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND ctx

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
153	25726720	Kim JW	2015	Biomarkers for Bisphosphonate-Related Osteonecrosis of the Jaw.	Clin Implant Dent Relat Res.	Tierexperimentelle Studie	-	
154	25683041	Schwartz HC	2015	American Association of Oral and Maxillofacial Surgeons position paper on medication-related osteonecrosis of the jaw--2014 update and CTX.	J Oral Maxillofac Surg.	Comment / Letter	-	
155	25244263	Agaçayak KS	2014	Experimental investigation of relationship between trauma and bisphosphonate-related osteonecrosis.	Niger J Clin Pract.	Tierexperimentelle Studie	-	
9				Treatment of a Patient with Implant Failure and Jaw Osteonecrosis: Successful Retreatment Using Implants.	J Oral Implantol.		-	X in 1.1
156	24341133	Lee PB	2013	Evaluation of serum biomarkers IL-17 and CTX for BRONJ: a pilot clinical case-control study.	J Calif Dent Assoc.	Case Report	-	
157	23954759	Kim JW	2013	Prospective biomarker evaluation in patients with osteonecrosis of the jaw who received bisphosphonates.	Bone.	Retrospektive Fallserie	-	
				C-terminal cross-linking telopeptide as a serologic	J Can Dent Assoc.		-	X in 1.1

				marker for bisphosphonate-related osteonecrosis of the jaw: review of 2 cases.				
158	23543695	Migliorati CA	2013	Assessing the association between bisphosphonate exposure and delayed mucosal healing after tooth extraction.	J Am Dent Assoc.	Retrospektive Fallserie	-	
159	23508560	Lee JJ	2013	Factors predicting the prognosis of oral alendronate-related osteonecrosis of the jaws: a 4-year cohort study.	Head Neck.	Retrospektive Chorotenstudie	-	
160	23317355	Conte Neto N	2013	Experimental development of bisphosphonate-related osteonecrosis of the jaws in rodents.	Int J Exp Pathol.	Tierexperimentelle Studie	-	
161	23285320	Carini F	2012	Multiple systemic diseases complicated by bisphosphonate osteonecrosis: a case report.	Ann Stomatol (Roma).	Case Report	-	
162	23219943	Hokugo A	2013	Equilibrium-dependent bisphosphonate interaction with crystalline bone mineral explains anti-resorptive pharmacokinetics and prevalence of osteonecrosis of the jaw in rats.	Bone.	Tierexperimentelle Studie	-	
163	22783453	Carini F	2012	Surgical protocol in patients at risk for bisphosphonate osteonecrosis of the jaws: clinical use of serum telopeptide CTX in preventive monitoring of surgical risk.	Ann Stomatol (Roma).	Retrospektive Fallserie	-	
				Bone necrosis around dental implants: A patient treated with oral bisphosphonates, drug holiday and no risk according to serum CTX.	J Clin Exp Dent.		-	X in 1.1
164	22223192	O'Connell JE	2012	A role for C-terminal cross-linking telopeptide (CTX) level to predict the development of bisphosphonate-related osteonecrosis of the jaws (BRONJ) following oral surgery?	Ir J Med Sci.	Prospektive Fallserie	-	
165	22218418	Kwon YD	2012	Short-term teriparatide therapy as an adjunctive modality for bisphosphonate-related osteonecrosis of	Osteoporos Int.	Case Reports / Fallserie	-	

				the jaws.				
166	21809068	Atalay B	2011	Bisphosphonate-related osteonecrosis: laser-assisted surgical treatment or conventional surgery?	Lasers Med Sci.	Retrospektive Fallserie	-	
167	21332734	Borromeo GL	2011	A review of the clinical implications of bisphosphonates in dentistry.	Aust Dent J.	Narratives Review	-	
168	21037195	Grbic JT	2010	The incidence of osteonecrosis of the jaw in patients receiving 5 milligrams of zoledronic acid: data from the health outcomes and reduced incidence with zoledronic acid once yearly clinical trials program.	J Am Dent Assoc.	Prospektive kontrollierte klinische Studie	-	
				Retrospective study of two biochemical markers for the risk assessment of oral bisphosphonate-related osteonecrosis of the jaws: can they be utilized as risk markers?	Clin Oral Implants Res.		-	X in 1.1
169	20728033	Lazarovici TS	2010	Serologic bone markers for predicting development of osteonecrosis of the jaw in patients receiving bisphosphonates.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
170	20674404	Fleisher KE	2010	Predicting risk for bisphosphonate-related osteonecrosis of the jaws: CTX versus radiographic markers.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Retrospektive Fallserie	-	
171	20360666	Vescovi P	2010	Bisphosphonate-Related Osteonecrosis of the Jaw (BRONJ) therapy. A critical review.	Minerva Stomatol.	Narratives Review	-	
172	20147814	Lee CY	2010	CTX biochemical marker of bone metabolism. Is it a reliable predictor of bisphosphonate-associated osteonecrosis of the jaws after surgery? Part II: a prospective clinical study.	Implant Dent.	Prospektive kontrollierte klinische Studie	-	
173	20116729	Dodson TB	2010	CTX and its role in managing patients exposed to oral bisphosphonates.	J Oral Maxillofac Surg.	Comment / Letter	-	
174	20070853	Lund T	2010	Multiple myeloma: changes in serum C-terminal	Eur J Haematol.	Prospektive unselektierte	-	

				telo peptide of collagen type I and bone-specific alkaline phosphatase can be used in daily practice to detect imminent osteolysis.		Cohortenstudie		
175	20009603	Lee CY	2009	CTX biochemical marker of bone metabolism. Is it a reliable predictor of bisphosphonate-associated osteonecrosis of the jaws after surgery? Part I: biological concepts with a review of the literature.	Implant Dent.	Narratives Review	-	
176	19925985	Kwon YD	2009	Correlation between serum C-terminal cross-linking telopeptide of type I collagen and staging of oral bisphosphonate-related osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
177	19446200	Kunchur R	2009	Clinical investigation of C-terminal cross-linking telopeptide test in prevention and management of bisphosphonate-associated osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Prospektive randomisierte kontrollierte Studie	-	
	19371821			Reconstruction of defects caused by bisphosphonate-induced osteonecrosis of the jaws.	J Oral Maxillofac Surg.		-	X in 1.1
178	19257812	Baim S	2009	Assessing the clinical utility of serum CTX in postmenopausal osteoporosis and its use in predicting risk of osteonecrosis of the jaw.	J Bone Miner Res.	Narratives Review	-	
179	18486811	American Society for Bone and Mineral Research Task Force on Osteonecrosis of the Jaw	2008	Oral bisphosphonate-induced osteonecrosis: risk factors, prediction of risk using serum CTX testing, prevention, and treatment.	J Oral Maxillofac Surg.	Comment / Letter	-	
180	18486810	Schwartz HC	2008	Serum CTX testing.	J Oral Maxillofac Surg.	Comment / Letter	-	
181	18396443	Bagan JV	2008	Collagen telopeptide (serum CTX) and its relationship with the size and number of lesions in osteonecrosis of the jaws in cancer patients on intravenous bisphosphonates.	Oral Oncol.	Prospektive kontrollierte klinische Studie	-	

182	18022461	Marx RE	2007	Oral bisphosphonate-induced osteonecrosis: risk factors, prediction of risk using serum CTX testing, prevention, and treatment.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
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1.7 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND medication time

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
183	25544302	Rotaru H	2015	Pedicated buccal fat pad flap as a reliable surgical strategy for the treatment of medication-related osteonecrosis of the jaw.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
184	25511956	Hinson AM	2015	Temporal correlation between bisphosphonate termination and symptom resolution in osteonecrosis of the jaw: a pooled case report analysis.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
185	25352470	Janovszky A	2014	Periosteal microcirculatory reactions in a zoledronate-induced osteonecrosis model of the jaw in rats.	Clin Oral Investig.	Tierexperimentelle Studie	-	
186	25234529	Ruggiero SL	2014	American Association of Oral and Maxillofacial Surgeons position paper on medication-related osteonecrosis of the jaw--2014 update.	J Oral Maxillofac Surg.	Practical Guideline	-	
187	24827755	Hoefert S	2014	Atraumatic tooth extraction in patients taking bisphosphonates: a review of literature and experience with three cases.	Oral Maxillofac Surg.	Narratives Review / Case Reports	-	
				Treatment of a Patient with Implant Failure and Jaw Osteonecrosis: Successful Retreatment Using Implants.	J Oral Implantol.		-	X in 1.1
188	24023329	Assaf AT	2013	Incidence of bisphosphonate-related osteonecrosis of the jaw in consideration of primary diseases and	Anticancer Res.	Retrospektive Fallserie	-	

				concomitant therapies.				
189	23979955	Bone HG	2013	The effect of three or six years of denosumab exposure in women with postmenopausal osteoporosis: results from the FREEDOM extension.	J Clin Endocrinol Metab.	Prospektive randomisierte kontrollierte Multicenter Studie	-	
190	22000426	Moretti F	2011	A prospective clinical trial for assessing the efficacy of a minimally invasive protocol in patients with bisphosphonate-associated osteonecrosis of the jaws.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Prospektive kontrollierte klinische Studie	-	
53				Bisphosphonate-related osteonecrosis of the jaws: a case series of 25 patients affected by osteoporosis.	Int J Oral Maxillofac Surg.		-	X in 1.1
191	19748711	Rogers SN	2009	A survey of consultant members of the British Association of Oral and Maxillofacial Surgeons regarding bisphosphonate-induced osteonecrosis of the jaws.	Br J Oral Maxillofac Surg.	Prospektive Studie	-	
192	19536569	Hoefert S	2010	Importance of microcracks in etiology of bisphosphonate-related osteonecrosis of the jaw: a possible pathogenetic model of symptomatic and non-symptomatic osteonecrosis of the jaw based on scanning electron microscopy findings.	Clin Oral Investig.	In Vitro Studie	-	
193	19195232	Dao V	2008	Bisphosphonate use and health history questionnaire.	N Y State Dent J.	Retrospektive Fallserie	-	
194	18834251	Cetinkaya BO	2008	Effects of risedronate on alveolar bone loss and angiogenesis: a stereologic study in rats.	J Periodontol.	Tierexperimentelle Studie	-	
195	17346585	Zahrowski JJ	2007	Bisphosphonate treatment: an orthodontic concern calling for a proactive approach.	Am J Orthod Dentofacial Orthop.	Narratives Review	-	
196	17299010	Krueger CD	2007	Bisphosphonate-induced osteonecrosis of the jaw.	Ann Pharmacother.	Systematisches Review	-	

2. Outcome: Kaufunktion

2.1. masticatory efficiency AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
197	25822743	Farias-Neto A	2015	Changes in patient satisfaction and masticatory efficiency during adaptation to new dentures.	Compend Contin Educ Dent.	Prospektive kontrollierte klinische Fallstudie	-	
198	25378781	Sharma MC	2014	Clinical evaluation of overdenture retention using indigenous dental implants.	Med J Armed Forces India.	Prospektive Fallserie	-	
199	25307515	Boven GC	2015	Improving masticatory performance, bite force, nutritional state and patient's satisfaction with implant overdentures: a systematic review of the literature.	J Oral Rehabil.	Systematisches Review	-	
200	24372288	Meena A	2014	Effect of implant-supported prosthesis on the bite force and masticatory efficiency in subjects with shortened dental arches.	J Oral Rehabil.	Prospektive Fallstudie	-	
201	24293924	Praveen M	2012	A New Approach for Management of Kennedy's Class I Condition Using Dental Implants: A Case Report.	J Indian Prosthodont Soc.	Case Report	-	
202	24136282	Liao XL	2013	[Effect of early-loaded small diameter implants retained mandibular overdentures on masticatory performance].	Beijing Da Xue Xue Bao.	Prospektive kontrollierte klinische Studie	-	
203	23741602	Gargari M	2013	Development of patient-based questionnaire about aesthetic and functional differences between overdentures implant-supported and overdentures tooth-supported. Study of 43 patients with a follow up of 1 year.	Oral Implantol (Rome).	Prospektive kontrollierte klinische Studie	-	
204	23438416	Witter DJ	2013	Clinical interpretation of a masticatory normative indicator analysis of masticatory function in subjects with different occlusal and prosthodontic status.	J Dent.	Prospektive klinische kontrollierte Studie	-	
205	23289495	Takaba M	2013	Implant-supported fixed dental prostheses with	J Prosthodont.	Case Report	-	

				CAD/CAM-fabricated porcelain crown and zirconia-based framework.				
206	23204737	Agarwal S	2011	Twin occlusion: a solution to rehabilitate hemimandibulectomy patient-a case report.	J Indian Prosthodont Soc.	Case Report	-	
207	23077914	Preoteasa E	2012	Patients' satisfaction with conventional dentures and mini implant anchored overdentures.	Rev Med Chir Soc Med Nat lasi.	Prospektive Fallserie	-	
208	23057045	Hong HR	2012	Effect of implant position, angulation, and attachment height on peri-implant bone stress associated with mandibular two-implant overdentures: a finite element analysis.	Int J Oral Maxillofac Implants.	In vitro Studie	-	
209	22938189	Drago C	2013	Maintenance of implant hybrid prostheses: clinical and laboratory procedures.	J Prosthodont.	Case Report	-	
210	22925922	Cheng T	2012	Patient satisfaction and masticatory efficiency of single implant-retained mandibular overdentures using the stud and magnetic attachments.	J Dent.	Prospektive randomisierte kontrollierte klinische Studie	-	
211	22883819	Mei M	2012	[Influence of reducing buccolingual width of artificial crown of implant prosthesis on distribution of biting force and masticatory efficiency].	Zhonghua Kou Qiang Yi Xue Za Zhi.	In – Vitro Studie	-	
212	22855902	Das KP	2012	The first-choice standard of care for an edentulous mandible: a Delphi method survey of academic prosthodontists in the United States.	J Am Dent Assoc.	Consensus Development Conference	-	
213	22264673	Carlsson GE	2012	Early in contrast to recent methods to evaluate masticatory function in implant patients.	J Prosthodont Res.	Narratives Review	-	
214	21916952	Farias Neto A	2012	The influence of mandibular implant-retained overdentures in masticatory efficiency.	Gerodontology.	Prospektive randomisierte kontrollierte Studie	-	

215	21556258	Kim MS	2011	Masticatory function following implants replacing a second molar.	J Periodontal Implant Sci.	Retrospektive Fallserie	-	
216	21251117	Burak Özcelik T	2011	Biomechanical evaluation of tooth- and implant-supported fixed dental prostheses with various nonrigid connector positions: a finite element analysis.	J Prosthodont.	In-Vitro Studie	-	
217	22433641	Kotenko MV	2011	[Efficiency rating of various types of implants when placing into the socket of an extracted tooth].	Stomatologiia (Mosk).	Prospektive kontrollierte klinische Studie	-	
218	20546490	Rossetti PH	2010	Relevant anatomic and biomechanical studies for implant possibilities on the atrophic maxilla: critical appraisal and literature review.	J Prosthodont.	Systematisches Review	-	
219	20095193	Pace-Balzan A	2009	The responsiveness of the Liverpool Oral Rehabilitation Questionnaire (LORQ): a pilot study.	Int J Prosthodont.	Retrospektive Fallserie	-	
220	20072014	Goiato MC	2010	Obturator for rehabilitation of cleft palate with implant-supported retention system.	J Craniofac Surg.	Case Report	-	
221	19832766	Heckmann SM	2009	Improvement and long-term stability of neuromuscular adaptation in implant-supported overdentures.	Clin Oral Implants Res.	Prospektive klinische Studie	-	
222	19813425	Rismanchian M	2009	Effect of implants on maximum bite force in edentulous patients.	J Oral Implantol.	Prospektive kontrollierte klinische Studie	-	
223	19573689	Lowe LG	2009	An implant-supported, cobalt-chromium milled bar and nonflanged attachment-retained overdenture to rehabilitate the edentulous mandible.	J Prosthet Dent.	Case Report	-	
224	19084116	Woodmansey KF	2009	Differences in masticatory function in patients with endodontically treated teeth and single-implant-supported prostheses: a pilot study.	J Endod.	Prospektive kontrollierte klinische Studie	-	
225	18784876	Zhang JQ	2008	[Quantitative study of application of magnetic attachments in mandibular complete overdentures].	Shanghai Kou Qiang Yi Xue.	Prospektive Fallserie	-	
226	18717400	Mancuso DN	2008	Bite force and masticatory efficiency in implant-retained	Dent Today.	Narratives Review	-	

				dentures: literature review.				
227	18633477	Abu-Saleh T	2008	Implant-supported crowns for a shortened dental arch: a case report.	J Contemp Dent Pract.	Case Report	-	
228	18568230	Muller K	2008	Nutritional and anthropometric analysis of edentulous patients wearing implant overdentures or conventional dentures.	Braz Dent J.	Prospektive randomisierte kontrollierte klinische Studie	-	
229	18467798	Iida S	2008	[Implant therapy for bone loss in the premaxillar part of the bilateral cleft lip and palate patient].	Nihon Hotetsu Shika Gakkai Zasshi.	Case Report	-	
230	17594368	Gotfredsen K	2007	What dentition assures oral function?	Clin Oral Implants Res.	Systematisches Review	-	
231	16629885	Feine JS	2006	Measuring chewing ability in randomized controlled trials with edentulous populations wearing implant prostheses.	J Oral Rehabil.	Narratives Review	-	
232	16430185	Wang HX	2005	[Clinical study of complete dentures supported by two endosteal magnetic-attachment implants].	Hua Xi Kou Qiang Yi Xue Za Zhi.	Prospektive Fallserie	-	
233	16285542	Tang Q	2005	[Clinical evaluation of masticatory function of implant supported dentures in partially edentulous patients].	Hua Xi Kou Qiang Yi Xue Za Zhi.	Retrospektive Fallserie	-	
234	15775521	Kawazu H	2001	[Periodontal disease and implant-supported prostheses].	Clin Calcium.	Narratives Review	-	
235	15329377	van Kampen FM	2004	Masticatory function with implant-supported overdentures.	J Dent Res.	Prospektive randomisierte kontrollierte Studie	-	
236	15218557	Fukuda M	2004	Implant-supported edentulous maxillary obturators with milled bar attachments after maxillectomy.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
237	12887797	Chen L	2003	[A comparative study of masticatory efficiency and mandibular movement pattern among patients with CD, COD and IOD].	Zhonghua Kou Qiang Yi Xue Za Zhi.	Prospektive kontrollierte klinische Studie	-	
238	12498473	Chen L	2002	The masticatory efficiency of mandibular implant-	J Oral Implantol.	Prospektive Fallserie	-	

				supported overdentures as compared with tooth-supported overdentures and complete dentures.				
239	10512389	Tang L	1999	A within-subject comparison of mandibular long-bar and hybrid implant-supported prostheses: evaluation of masticatory function.	J Dent Res.	Prospektive randomisierte kontrollierte klinische Studie	-	
240	9791305	Ettinger RL	1998	Changing dietary patterns with changing dentition: how do people cope?	Spec Care Dentist.	Narratives Review	-	
241	9687120	Pera P	1998	Implant anchored complete mandibular denture: evaluation of masticatory efficiency, oral function and degree of satisfaction.	J Oral Rehabil.	Prospektive Fallserie	-	
242	9576317	Khamis MM	1998	A comparison of the effect of different occlusal forms in mandibular implant overdentures.	J Prosthet Dent.	Prospektive Fallserie	-	
243	9326900	Tang L	1997	A within-subject comparison of mandibular long-bar and hybrid implant-supported prostheses: psychometric evaluation and patient preference.	J Dent Res.	Prospektive kontrollierte klinische Studie	-	
244	9477779	Fujimoto T	1997	Implant-supported prostheses after maxillary cancer resection: preliminary report.	Implant Dent.	Retrospektive Fallserie	-	
245	8783527	Budtz-Jørgensen E	1996	Restoration of the partially edentulous mouth--a comparison of overdentures, removable partial dentures, fixed partial dentures and implant treatment.	J Dent.	Narratives Review	-	
246	9601247	Sethi A	1995	Inferior alveolar nerve repositioning in implant dentistry: a preliminary report.	Int J Periodontics Restorative Dent.	Narratives Review	-	
247	7814759	Geertman ME	1994	Comminution of food with mandibular implant-retained overdentures.	J Dent Res.	Prospektive randomisierte kontrollierte klinische Studie	-	

248	7802913	Carlsson GE	1994	Ten-year longitudinal study of masticatory function in edentulous patients treated with fixed complete dentures on osseointegrated implants.	Int J Prosthodont.	Retrospektive Fallserie	-	
249	8006238	Feine JS	1994	Within-subject comparisons of implant-supported mandibular prostheses: choice of prosthesis.	J Dent Res.	Prospektive randomisierte kontrollierte klinische Studie	-	
250	8148793	Akeel R	1993	Masticatory efficiency of patients treated with implant retained fixed bridges in the upper jaw over a 2-year period.	Eur J Prosthodont Restor Dent.	Prospektive Fallserie	-	
251	8316941	Lundqvist S	1993	Speech and other oral functions. Clinical and experimental studies with special reference to maxillary rehabilitation on osseointegrated implants.	Swed Dent J Suppl.	Retrospektive Fallserie / Narratives Review	-	
252	8267870	Douglas WH	1993	Wear rates of artificial denture teeth opposed by natural dentition.	J Clin Dent.	In-Vitro Studie	-	
253	1463123	Zlotolow IM	1992	Osseointegrated implants and functional prosthetic rehabilitation in microvascular fibula free flap reconstructed mandibles.	Am J Surg.	Case Reports	-	
254	1411271	Lundqvist S	1992	Oral function in patients wearing fixed prosthesis on osseointegrated implants in the maxilla: 3-year follow-up study.	Scand J Dent Res.	Retrospektive Fallserie	-	
255	2051364	Kapur KK	1991	Veterans Administration Cooperative Dental Implant Study--comparisons between fixed partial dentures supported by blade-vent implants and removable partial dentures. Part III: Comparisons of masticatory scores between two treatment modalities.	J Prosthet Dent.	Prospektive randomisierte kontrollierte klinische Studie	-	
256	2133334	Tzakis MG	1990	Oral function in patients treated with prostheses on	Int J Oral Maxillofac	Prospektive Fallserie	-	

				Branemark osseointegrated implants in partially edentulous jaws: a pilot study.	Implants.			
257	2488918	Kim YS	1989	[Treatment with Brånemark osseointegrated prosthesis].	Taehan Chikkwa Uisa Hyophoe Chi.	Case Report	-	
258	3456032	Lindquist LW	1986	Changes in bite force and chewing efficiency after denture treatment in edentulous patients with denture adaptation difficulties.	J Oral Rehabil.	Prospektive kontrollierte klinische Studie	-	
259	3859984	Lindquist LW	1985	Long-term effects on chewing with mandibular fixed prostheses on osseointegrated implants.	Acta Odontol Scand.	Prospektive kontrollierte klinische Studie	-	
260	6376372	Carlsson GE	1984	Masticatory efficiency: the effect of age, the loss of teeth and prosthetic rehabilitation.	Int Dent J.	Narratives Review	-	

2.2. tmj disorders AND dental implant AND prevention

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
261	22409139	Sulun T	2011	A simple technique for increasing the occlusal vertical dimension of removable denture wearers.	J Calif Dent Assoc.	Case Report	-	
262	21179931	Davies SJ	2010	Occlusal considerations in implantology: good occlusal practice in implantology.	Dent Update.	Narratives Review	-	
263	19014021	Ross G	2008	Low level lasers in dentistry.	Gen Dent.	Narratives Review	-	
264	17029188	Worrall SF	2006	Alloplastic reconstruction of the temporomandibular joint in treatment of craniofacial developmental or congenital anomalies: a surgical case report.	Surg Technol Int.	Case Report	-	
265	16046969	Allen EP	2005	Annual review of selected dental literature: report of the Committee on Scientific Investigation of the American	J Prosthet Dent.	Narratives Review	-	

				Academy of Restorative Dentistry.				
266	11458262	Allen EP	2001	Annual review of selected dental literature: report of the committee on scientific investigation of the American Academy of Restorative Dentistry.	J Prosthet Dent.	Narratives Review	-	
267	9237147	Jendresen MD	1997	Annual review of selected dental literature: report of the Committee on Scientific Investigation of the American Academy of Restorative Dentistry.	J Prosthet Dent.	Narratives Review	-	
268	8814636	Allen EP	1996	Annual review of selected dental literature.	J Prosthet Dent.	Narratives Review	-	
269	1941682	Jendresen MD	1991	Report of the Committee on Scientific Investigation of the American Academy of Restorative Dentistry.	J Prosthet Dent.	Narratives Review	-	
270	2389849	Kokich V	1990	What's new in dentistry?	Angle Orthod.	Narratives Review	-	

3. Outcome: Lebensqualität

3.1. quality of life AND dental implant AND social eating

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
271	24914912	Vieira RA	2014	Benefits of rehabilitation with implants in masticatory function: is patient perception of change in accordance with the real improvement?	J Oral Implantol.	Prospektive Fallserie	-	
272	22976570	Bekiroglu N	2012	Oral complaints of denture-wearing elderly people living in two nursing homes in Istanbul, Turkey.	Oral Health Dent Manag.	Prospektive Fallserie	-	
273	22819956	Preciado A	2012	Differences in impact of patient and prosthetic characteristics on oral health-related quality of life among implant-retained overdenture wearers.	J Dent.	Retrospektive Fallserie	-	

274	22587026	Johannsen A	2012	Dental implants from the patients perspective: transition from tooth loss, through amputation to implants - negative and positive trajectories.	J Clin Periodontol.	Retrospektive Fallserie	-	
275	22580352	Kelly SA	2012	Development of a patient-based questionnaire about emotional and social issues related to eating with dentures.	J Dent.	Retrospektive Fallserie	-	
276	22250619	Babbush CA	2012	Posttreatment quantification of patient experiences with full-arch implant treatment using a modification of the OHIP-14 questionnaire.	J Oral Implantol.	Retrospektive Fallserie	-	
277	21278531	Dholam KP	2011	Assessment of quality of life after implant-retained prosthetically reconstructed maxillae and mandibles postcancer treatments.	Implant Dent.	Prospektive Fallserie	-	
278	20050983	Souza RF	2010	Exploratory factor analysis of the Brazilian OHIP for edentulous subjects.	J Oral Rehabil.	Retrospektive Fallserie	-	
279	19559515	Hyland R	2009	A qualitative study on patient perspectives of how conventional and implant-supported dentures affect eating.	J Dent.	Retrospektive kontrollierte Studie	-	
280	19278520	Packer M	2009	The potential benefits of dental implants on the oral health quality of life of people with Parkinson's disease.	Gerodontology.	Prospektive kontrollierte Studie	-	
281	18501562	Harding SA	2008	Impact of perioperative hyperbaric oxygen therapy on the quality of life of maxillofacial patients who undergo surgery in irradiated fields.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
282	17999736	Assunção WG	2007	Comparing the efficacy of mandibular implant-retained overdentures and conventional dentures among elderly edentulous patients: satisfaction and quality of life.	Gerodontology.	Prospektive kontrollierte Studie	-	
283	17547943	Penn M	2007	Implant-retained feeding aid prosthesis for a patient following total glossectomy and laryngectomy: a clinical	J Prosthet Dent.	Case Report	-	

				report.				
284	16188426	Pace-Balzan A	2006	The further development and validation of the Liverpool Oral Rehabilitation Questionnaire: a cross-sectional survey of patients attending for oral rehabilitation and general dental practice.	Int J Oral Maxillofac Surg.	Prospektive und Retrospektive Fallserie	-	
285	16139696	Heydecke G	2005	The impact of conventional and implant supported prostheses on social and sexual activities in edentulous adults Results from a randomized trial 2 months after treatment.	J Dent.	Prospektive randomisierte kontrollierte Studie	-	
286	12608678	Leung AC	2003	Dental implants in reconstructed jaws: patients' evaluation of functional and quality-of-life outcomes.	Int J Oral Maxillofac Implants.	Prospektive und Retrospektive kontrollierte klinische Studie	-	
287	11669253	Melas F	2001	Oral health impact on daily performance in patients with implant-stabilized overdentures and patients with conventional complete dentures.	Int J Oral Maxillofac Implants.	Prospektive Fallserie	-	
288	11314482	Sandberg G	2000	Ten years of patients' experiences with fixed implant-supported prostheses.	J Dent Hyg.	Retrospektive Fallserie	-	
289	9274080	Bouma J	1997	Psychosocial effects of implant-retained overdentures.	Int J Oral Maxillofac Implants.	Prospektive kontrollierte Studie	-	

3.2. oral health related quality of life AND dental implant NOT elderly patients NOT oral cavity cancer

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
290	26034930	Fernandez-Estevan	2015	Oral health-related quality of life of implant-supported	Med Oral Patol Oral Cir	Retrospektive	-	

		L		overdentures versus conventional complete prostheses: Retrospective study of a cohort of edentulous patients.	Bucal.	kontrollierte klinische Studie		
291	25862276	Perea C	2015	Validation of the 'Quality of Life with Implant Prostheses (QoLIP-10)' questionnaire for wearers of cement-retained implant-supported restorations.	J Dent.	Retrospektive kontrollierte klinische Studie	-	
292	25818656	Fueki K	2015	Effect of prosthetic restoration on oral health-related quality of life in patients with shortened dental arches: a multicentre study.	J Oral Rehabil.	Prospektive multicenter Studie	-	
293	25762047	Murray CG	2015	Advanced restorative dentistry - a problem for the elderly? An ethical dilemma.	Aust Dent J.	Narratives Review	-	
294	25762040	Dudley J	2015	Implants for the ageing population.	Aust Dent J.	Narratives Review	-	
295	25615924	Yamada J	2015	Immediate loading of complete-arch fixed prostheses for edentulous maxillae after flapless guided implant placement: a 1-year prospective clinical study.	Int J Oral Maxillofac Implants.	Prospektive Fallserie	-	
296	25376858	Menassa M	2014	Patients' expectations, satisfaction, and quality of life with immediate loading protocol.	Clin Oral Implants Res.	Prospektive Fallserie	-	
199				Improving masticatory performance, bite force, nutritional state and patient's satisfaction with implant overdentures: a systematic review of the literature.	J Oral Rehabil.		-	X in 2.1
297	25294397	Peršić S	2015	Influence of different prosthodontic rehabilitation options on oral health-related quality of life, orofacial esthetics and chewing function based on patient-reported outcomes.	Qual Life Res.	Prospektive kontrollierte Studie	-	
298	25234214	Geckili O	2014	Mandibular 2-implant overdentures improve oral health-related quality of life more than conventional dentures, but there are cultural differences.	J Evid Based Dent Pract.	Comment	-	
299	25220076	Vena DA	2014	Prevalence of persistent pain 3 to 5 years post primary	J Endod.	Prospektive Fallstudie	-	

				root canal therapy and its impact on oral health-related quality of life: PEARL Network findings.				
300	25177466	Carlsson GE	2014	Implant and root supported overdentures - a literature review and some data on bone loss in edentulous jaws.	J Adv Prosthodont.	Narratives Review	-	
301	24977244	Pommer B	2014	Patients' preferences towards minimally invasive treatment alternatives for implant rehabilitation of edentulous jaws.	Eur J Oral Implantol.	Systematisches Review	-	
302	24720855	Rousseau N	2014	'Your whole life is lived through your teeth': biographical disruption and experiences of tooth loss and replacement.	Sociol Health Illn.	Prospektive Fallserie	-	
303	24666378	Misumi S	2015	A prospective study of changes in oral health-related quality of life during immediate function implant procedures for edentulous individuals.	Clin Oral Implants Res.	Prospektive kontrollierte klinische Studie	-	
304	24547926	Emami E	2015	Patient perceptions of the mandibular three-implant overdenture: a practice-based study.	Clin Oral Implants Res.	Prospektive Fallserie	-	
305	24422032	Kuoppala R	2013	Quality of Life of Patients Treated With Implant-Supported Mandibular Overdentures Evaluated With the Oral Health Impact Profile (OHIP-14): a Survey of 58 Patients.	J Oral Maxillofac Res.	Prospektive Fallserie	-	
306	24422026	Epivatianos A	2013	Myofibroblasts and transforming growth factor-beta1 in reactive gingival overgrowths.	J Oral Maxillofac Res.	Prospektive Fallserie / In-Vitro Studie	-	
307	24393461	Limmer B	2014	Complications and patient-centered outcomes with an implant-supported monolithic zirconia fixed dental prosthesis: 1 year results.	J Prosthodont.	Retrospektive Fallserie	-	
308	24348622	Asgari I	2013	Evaluation of orthodontic treatment need by patient-based methods compared with normative method.	Dent Res J (Isfahan).	Prospektive Fallserie	-	
309	24043011	Zhao JJ	2013	Single implant in the mandibular molar region of	Saudi Med J.	Case Report	-	

				edentulous patient.				
310	24018463	Preciado A	2013	Impact of various screwed implant prostheses on oral health-related quality of life as measured with the QoLIP-10 and OHIP-14 scales: a cross-sectional study.	J Dent.	Prospektive kontrollierte Studie	-	
311	24011002	Emami E	2013	In individuals with complete tooth loss, the mandibular implant-retained overdenture increases patient satisfaction and oral health related quality of life compared to conventional dentures.	J Evid Based Dent Pract.	Comment	-	
312	23751879	Emami E	2013	The nocturnal use of complete dentures and sleep stability in edentulous elders.	J Dent.	Prospektive Fallserie	-	
313	23581398	Zembic A	2014	Patient-reported outcomes of maxillary implant-supported overdentures compared with conventional dentures.	Clin Oral Implants Res.	Prospektive kontrollierte klinische Studie	-	
314	23331716	Grover M	2014	OHRQoL, masticatory performance and crestal bone loss with single-implant, magnet-retained mandibular overdentures with conventional and shortened dental arch.	Clin Oral Implants Res.	Prospektive kontrollierte klinische Studie	-	
315	23253842	Thomason JM	2012	The use of mandibular implant-retained overdentures improve patient satisfaction and quality of life.	J Evid Based Dent Pract.	Narratives Review über Meta Analysen	-	
316	23062131	Muthukuru M	2012	Non-surgical therapy for the management of peri-implantitis: a systematic review.	Clin Oral Implants Res.	Systematisches Review	-	
317	22831275	Trulsson M	2012	From brain to bridge: masticatory function and dental implants.	J Oral Rehabil.	Narratives Review	-	
318	22092512	Jabbour Z	2012	Is oral health-related quality of life stable following rehabilitation with mandibular two-implant overdentures?	Clin Oral Implants Res.	Prospektives randomisierte kontrollierte Studie	-	
319	21887625	Schwarz F	2011	[Significance of dental implants for health care].	Bundesgesundheitsblatt	Narratives Review	-	

					Gesundheitsforschung Gesundheitsschutz.			
320	21740181	Landes CA	2012	Patient satisfaction after prosthetic rehabilitation of bone-grafted alveolar clefts with nonsubmerged ITI Straumann dental implants loaded at three months.	Cleft Palate Craniofac J.	Prospektive und retrospektive Fallserie	-	
321	21415648	Ballon A	2011	Patients' preoperative expectations and postoperative satisfaction of dysgnathic patients operated on with resorbable osteosyntheses.	J Craniofac Surg.	Prospektive Fallserie	-	
322	21029154	Emami E	2012	Perceived sleep quality among edentulous elders.	Gerodontology.	Prospektive randomisierte kontrollierte Studie	-	
323	20684439	Polzer I	2010	Edentulism as part of the general health problems of elderly adults.	Int Dent J.	Narratives Review	-	
324	20662674	Bilhan H	2011	A quality-of-life comparison between self-aligning and ball attachment systems for 2-implant-retained mandibular overdentures.	J Oral Implantol.	Prospektive randomisierte kontrollierte Studie	-	
325	20230974	Thomason JM	2010	The use of mandibular implant-retained overdentures improve patient satisfaction and quality of life.	J Evid Based Dent Pract.	Narratives Review über Meta Analysen	-	
326	19931345	Emami E	2010	Better oral health related quality of life: type of prosthesis or psychological robustness?	J Dent.	Prospektive randomisierte kontrollierte Studie	-	
327	19515032	Emami E	2009	Impact of implant support for mandibular dentures on satisfaction, oral and general health-related quality of life: a meta-analysis of randomized-controlled trials.	Clin Oral Implants Res.	Meta Analyse	-	
328	19291086	Turkyilmaz I	2010	Should edentulous patients be constrained to removable complete dentures? The use of dental implants to improve the quality of life for edentulous patients.	Gerodontology.	Systematisches Review	-	

280				The potential benefits of dental implants on the oral health quality of life of people with Parkinson's disease.	Gerodontology.		-	X in 3.1
329	18498586	Mericske-Stern R	2008	Prosthetic considerations.	Aust Dent J.	Narratives Review	-	
330	18476568	Zhang XC	2007	[Health-related quality of life for patients using implant-supported prostheses].	Zhonghua Kou Qiang Yi Xue Za Zhi.	Narratives Review	-	
331	18217865	Sobotta BA	2008	Cruise medicine: the dental perspective on health care for passengers during a world cruise.	J Travel Med.	Prospektive Fallserie	-	
332	17594380	Thomason JM	2007	How do patients perceive the benefit of reconstructive dentistry with regard to oral health-related quality of life and patient satisfaction? A systematic review.	Clin Oral Implants Res.	Systematisches Review	-	
333	17594379	Klineberg I	2007	The bases for using a particular occlusal design in tooth and implant-borne reconstructions and complete dentures.	Clin Oral Implants Res.	Systematisches Review	-	
334	17594377	Türp JC	2007	In patients with temporomandibular disorders, do particular interventions influence oral health-related quality of life? A qualitative systematic review of the literature.	Clin Oral Implants Res.	Systematisches Review	-	
335	17187039	Jokstad A	2006	Implant retained or conventional dentures, which give more patients satisfaction?	Evid Based Dent.	Prospektive randomisierte kontrollierte Studie	-	
336	16900816	Strassburger C	2006	Influence of implant and conventional prostheses on satisfaction and quality of life: A literature review. Part 2: Qualitative analysis and evaluation of the studies.	Int J Prosthodont.	Systematisches Review	-	
231				Measuring chewing ability in randomized controlled trials with edentulous populations wearing implant prostheses.	J Oral Rehabil.		-	X in 2.1
337	16617194	Naito M	2006	Oral health status and health-related quality of life: a	J Oral Sci.	Systematisches Review	-	

				systematic review.				
338	16335167	Walton JN	2005	Choosing or refusing oral implants: a prospective study of edentulous volunteers for a clinical trial.	Int J Prosthodont.	Prospektive Fallserie	-	
285				The impact of conventional and implant supported prostheses on social and sexual activities in edentulous adults Results from a randomized trial 2 months after treatment.	J Dent.		-	X in 3.1
339	15008238	Strassburger C	2004	Influence of prosthetic and implant therapy on satisfaction and quality of life: a systematic literature review. Part 1--Characteristics of the studies.	Int J Prosthodont.	Meta Analyse	-	
340	12656876	Allen PF	2003	A longitudinal study of quality of life outcomes in older adults requesting implant prostheses and complete removable dentures.	Clin Oral Implants Res.	Prospektive kontrollierte klinische Studie	-	
341	12162292	Heydecke G	2002	[Patient-based outcome measures: oral health-related quality of life].	Schweiz Monatsschr Zahnmed.	Narratives Review	-	
342	11409676	Allen PF	2001	An assessment of sensitivity to change of the Oral Health Impact Profile in a clinical trial.	Community Dent Oral Epidemiol.	Prospektive kontrollierte klinische Studie	-	
289				Psychosocial effects of implant-retained overdentures.	Int J Oral Maxillofac Implants.		-	X in 3.1

4. Outcome: Prognose der Restbeziehung

4.1. prognosis remaining dentition AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
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343	25422827	Felice P	2014	A comparison of two dental implant systems in partially edentulous patients: 1-year post-loading results from a pragmatic multicentre randomised controlled trial.	Eur J Oral Implantol.	Prospektive randomisierte kontrollierte Studie	-	
344	24977253	Krennmair S	2014	Immediately loaded distally cantilevered fixed mandibular prostheses supported by four implants placed in both in fresh extraction and healed sites: 2-year results from a prospective study.	Eur J Oral Implantol.	Prospektive Fallserie	-	
345	24570982	Khoury F	2013	The bony lid approach in pre-implant and implant surgery: a prospective study.	Eur J Oral Implantol.	Prospektive Fallserie	-	
346	24118202	Cortes AR	2014	Transition from failing dentition to full-arch fixed implant-supported prosthesis with a staged approach using removable partial dentures: a case series.		Retrospektive Fallserie	-	
347	23837166	Polizzi G	2013	A two-center retrospective analysis of long-term clinical and radiologic data of TiUnite and turned implants placed in the same mouth.-	Int J Prosthodont.	Retrospektive Fallstudie	-	
348	23433626	Closs LQ	2012	Esthetic and functional rehabilitation for oligodontia in the mixed dentition: case report.	J Dent Child (Chic).	Case Report	-	
349	23316954	Noelken R	2014	Maintenance of marginal bone support and soft tissue esthetics at immediately provisionalized OsseoSpeed implants placed into extraction sites: 2-year results.	Clin Oral Implants Res.	Retrospektive Fallserie	-	
350	22639800	Schwarz F	2012	Combined surgical therapy of peri-implantitis evaluating two methods of surface debridement and decontamination. A two-year clinical follow up report.	J Clin Periodontol.	Prospektive randomisierte kontrollierte Studie	-	
351	22336822	Esposito M	2012	Interventions for replacing missing teeth: management of soft tissues for dental implants.	Cochrane Database Syst Rev.	Meta Analyse	-	
352	22299095	Di Alberti L	2012	Clinical and radiologic evaluation of 70 immediately loaded single implants in the maxillary esthetic zone:	Int J Oral Maxillofac Implants.	Prospektive und Retrospektive Fallserie	-	

				preliminary results after 1 year of functional loading.				
353	22264210	Pieri F	2012	Immediate loading of dental implants placed in severely resorbed edentulous maxillae reconstructed with Le Fort I osteotomy and interpositional bone grafting.	J Periodontol.	Retrospektive Fallserie	-	
354	22117841	Urban T	2012	Immediate implant placement in molar regions: a 12-month prospective, randomized follow-up study.	Clin Oral Implants Res.	Prospektive randomisierte kontrollierte Studie	-	
355	22092586	Behneke A	2012	Factors influencing transfer accuracy of cone beam CT-derived template-based implant placement.	Clin Oral Implants Res.	Prospektive Fallserie	-	
356	22046906	Allen PF	2011	Prosthetic care for elderly patients.	Dent Update.	Narratives Review	-	
357	21834863	Fischer K	2013	Prospective 10-year cohort study based on a randomized, controlled trial (RCT) on implant-supported full-arch maxillary prostheses. part II: prosthetic outcomes and maintenance.	Clin Implant Dent Relat Res.	Prospektive randomisierte kontrollierte Studie	-	
358	21834860	Heschl A	2013	Overdentures in the edentulous mandible supported by implants and retained by a Dolder bar: a 5-year prospective study.	Clin Implant Dent Relat Res.	Prospektive Fallserie	-	
359	21745324	Chou YH	2013	An interdisciplinary treatment approach combining orthodontic forced eruption with immediate implant placement to achieve a satisfactory treatment outcome: a case report.	Clin Implant Dent Relat Res.	Case Report	-	
360	21734963	Kratl G	2011	Current aspects of restoring traumatically fractured teeth.	Eur J Esthet Dent.	Narratives Review	-	
361	21284759	Priest G	2011	Revisiting tooth preservation in prosthodontic therapy.	J Prosthodont.	Narratives Review	-	
362	21219391	Gallucci GO	2011	Dimensional changes of peri-implant soft tissue over 2 years with single-implant crowns in the anterior maxilla.	J Clin Periodontol.	Prospektive randomisierte kontrollierte Studie	-	

363	21197503	Bencharit S	2010	Complex prosthodontic treatment with dental implants for a patient with polymyalgia rheumatica: a clinical report.	Int J Oral Maxillofac Implants.	Case Report	-	
364	21050641	Peñarrocha-Diago MA	2011	Immediate versus nonimmediate placement of implants for full-arch fixed restorations: a preliminary study.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
365	20731584	Koutouzis T	2011	Retrospective evaluation of crestal bone changes around implants with reduced abutment diameter placed non-submerged and at subcrestal positions: the effect of bone grafting at implant placement.	J Periodontol.	Retrospektive kontrollierte klinische Studie	-	
366	20662861	Mura P	2012	Immediate loading of tapered implants placed in postextraction sockets: retrospective analysis of the 5-year clinical outcome.	Clin Implant Dent Relat Res.	Retrospektive Fallserie	-	
367	20586784	Bergenblock S	2012	Long-term follow-up of CeraOne™ single-implant restorations: an 18-year follow-up study based on a prospective patient cohort.	Clin Implant Dent Relat Res.	Retrospektive Fallserie	-	
368	20526254	Hernández-Alfaro F	2011	"Envelope" approach for onlay bone grafting: preliminary surgical and prosthetic results.	Med Oral Patol Oral Cir Bucal.	Prospektive Fallserie	-	
369	20450402	Avila G	2010	The influence of the bucco-palatal distance on sinus augmentation outcomes.	J Periodontol.	Prospektive Fallserie	-	
370	20303040	Gökçen-Röhlig B	2010	Clinical and radiographic outcomes of implants immediately placed in fresh extraction sockets.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Prospektive kontrollierte klinische Studie	-	
371	20070752	Canullo L	2010	Platform switching and marginal bone-level alterations: the results of a randomized-controlled trial.	Clin Oral Implants Res.	Prospektive randomisierte kontrollierte Studie	-	
372	19999670	Kalk W	2009	[Treatment planning in patients with a severe reduced dentition].	Ned Tijdschr Tandheelkd.	Narratives Review	-	
373	19906268	Fermergård R	2012	Osteotome sinus floor elevation without bone grafts--a	Clin Implant Dent Relat Res.	Retrospektive Fallstudie	-	

				3-year retrospective study with Astra Tech implants.				
374	19837318	Danza M	2009	Comparison between implants inserted into piezo split and unsplit alveolar crests.	J Oral Maxillofac Surg.	Retrospektive kontrollierte klinische Studie	-	
375	19123693	Jung BA	2009	Success rate of second-generation palatal implants.	Angle Orthod.	Prospektive multicenter Studie	-	
376	19058503	Versteegh PA	2008	[Prosthetic dilemmas. Prosthetic decisions and planning for partially edentulous patients].	Ned Tijdschr Tandheelkd.	Case Report	-	
377	18940498	Reich PP	2008	Autogenous transplantation of maxillary and mandibular molars.	J Oral Maxillofac Surg.	Prospektive und retrospektive Fallserie	-	
378	18717373	Cappiello M	2008	Evaluation of peri-implant bone loss around platform-switched implants.	Int J Periodontics Restorative Dent.	Prospektive klinische und radiografische kontrollierte Studie	-	
379	18380569	Fugazzotto PA	2008	Implant placement at the time of mandibular molar extraction: description of technique and preliminary results of 341 cases.	J Periodontol.	Retrospektive Fallserie	-	
380	18166089	Shirakata Y	2008	Comparison of injectable calcium phosphate bone cement grafting and open flap debridement in periodontal intrabony defects: a randomized clinical trial.	J Periodontol.	Prospektive randomisierte kontrollierte Studie	-	
381	17987861	Hoffmann O	2007	Combined periodontal and implant treatment of a case of aggressive periodontitis.	J Oral Implantol.	Case Report	-	
382	17929525	Bornstein MM	2007	Clinical performance of wide-body implants with a sandblasted and acid-etched (SLA) surface: results of a 3-year follow-up study in a referral clinic.	Int J Oral Maxillofac Implants.	Retrospektive Fallserie	-	
383	17636847	Esposito M	2007	Interventions for replacing missing teeth: management of soft tissues for dental implants.	Cochrane Database Syst Rev.	Meta Analyse	-	

384	17555415	Palmer RM	2007	Astra Tech single-tooth implants: an audit of patient satisfaction and soft tissue form.	J Clin Periodontol.	Retrospektive Fallserie	-	
385	17348889	Juodzbals G	2007	Soft and hard tissue assessment of immediate implant placement: a case series.	Clin Oral Implants Res.	Prospektive Fallserie	-	
386	17190301	Cornelini R	2006	Immediate loading of implants with 3-unit fixed partial dentures: a 12-month clinical study.	Int J Oral Maxillofac Implants.	Prospektive und retrospektive Fallserie	-	
387	17100744	Fröberg KK	2006	Immediate loading of Brånemark System Implants: a comparison between TiUnite and turned implants placed in the anterior mandible.	Clin Implant Dent Relat Res.	Prospektive und retrospektive kontrollierte klinische Studie	-	
388	16584411	Ellegaard B	2006	Non-grafted sinus implants in periodontally compromised patients: a time-to-event analysis.	Clin Oral Implants Res.	Retrospektive kontrollierte klinische Studie	-	
389	16460258	Fugazzotto PA	2006	Implant placement at the time of maxillary molar extraction: technique and report of preliminary results of 83 sites.	J Periodontol.	Retrospektive Fallserie	-	
390	16253102	Cangini F	2005	A comparison between enamel matrix derivative and a bioabsorbable membrane to enhance healing around transmucosal immediate post-extraction implants.	J Periodontol.	Prospektive kontrollierte klinische Studie	-	
391	15915881	Becker W	2005	Immediate implant placement: diagnosis, treatment planning and treatment steps/or successful outcomes.	J Calif Dent Assoc.	Narratives Review	-	
392	15635944	Belser UC	2004	Outcome analysis of implant restorations located in the anterior maxilla: a review of the recent literature.	Int J Oral Maxillofac Implants.	Narratives Review	-	
393	15626318	Cornelini R	2004	Deproteinized bovine bone and biodegradable barrier membranes to support healing following immediate placement of transmucosal implants: a short-term controlled clinical trial.	Int J Periodontics Restorative Dent.	Prospektive randomisierte kontrollierte Studie	-	

394	15017303	Castellon P	2004	Immediate Dental Implant Placement in Sockets Augmented With HTR Synthetic Bone.	Implant Dent.	Retrospektive Fallserie	-	
395	14579953	Bornstein MM	2003	Early loading of nonsubmerged titanium implants with a sandblasted and acid-etched (SLA) surface: 3-year results of a prospective study in partially edentulous patients.	Int J Oral Maxillofac Implants.	Prospektive Kohorten Studie	-	
396	12830496	Samet N	2003	[A systematic approach for removable partial denture design].	Refuat Hapeh Vehashinayim.	Narratives Review	-	
397	12816301	Yukna RA	2003	Evaluation of hard tissue replacement composite graft material as a ridge preservation/augmentation material in conjunction with immediate hydroxyapatite-coated dental implants.	J Periodontol.	Prospektive Fallserie	-	
398	12562363	Botticelli D	2003	The jumping distance revisited: An experimental study in the dog.	Clin Oral Implants Res.	Tierexperimentelle Studie	-	
399	12453125	Hardt CR	2002	Outcome of implant therapy in relation to experienced loss of periodontal bone support: a retrospective 5- year study.	Clin Oral Implants Res.	Retrospektive Fallserie	-	
400	12237798	Ambard A	2002	Rehabilitation of a bulimic patient using endosteal implants.	J Prosthodont.	Case Report	-	
401	11915552	Aires I	2002	Immediate placement in extraction sites followed by immediate loading: a pilot study and case presentation.	Implant Dent.	Prospektive und retrospektive kontrollierte Studie	-	
402	11807482	Chaffee NR	2002	Prosthetic complications in an implant-retained mandibular overdenture population: initial analysis of a prospective study.	J Prosthet Dent.	Prospektive kontrollierte klinische Studie	-	
403	11564112	Mayfield LJ	2001	Evaluation following functional loading of titanium fixtures placed in ridges augmented by deproteinized bone mineral. A human case study.	Clin Oral Implants Res.	Retrospektive Fallserie	-	

404	11516007	Kinsel RP	2001	Development of gingival esthetics in the terminal dentition patient prior to dental implant placement using a full-arch transitional fixed prosthesis: a case report.	Int J Oral Maxillofac Implants.	Case Report	-	
405	11458241	Schultes G	2001	Histologic evaluation of immediate versus delayed placement of implants after tooth extraction.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Tierexperimentelle Studie	-	
406	11404872	Budtz-Jørgensen E	2000	Aesthetic considerations for the treatment of partially edentulous patients with removable dentures.	Pract Periodontics Aesthet Dent.	Narratives Review	-	
407	11168269	Simion M	2001	Long-term evaluation of osseointegrated implants inserted at the time or after vertical ridge augmentation. A retrospective study on 123 implants with 1-5 year follow-up.	Clin Oral Implants Res.	Retrospektive Fallserie	-	
408	11168212	van Steenberghe D	2000	The clinical use of deproteinized bovine bone mineral on bone regeneration in conjunction with immediate implant installation.	Clin Oral Implants Res.	Retrospektive Fallserie	-	
409	10453672	Khoury F	1999	Augmentation of the sinus floor with mandibular bone block and simultaneous implantation: a 6-year clinical investigation.	Int J Oral Maxillofac Implants.	Retrospektive Fallserie	-	
410	9796148	Andersson G	1998	Oral implant rehabilitation in irradiated patients without adjunctive hyperbaric oxygen.	Int J Oral Maxillofac Implants.	Retrospektive Fallserie	-	
411	9590942	Nir-Hadar O	1998	Delayed immediate implants: alveolar bone changes during the healing period.	Clin Oral Implants Res.	Retrospektive Fallserie	-	
412	9338869	Sullivan DY	1997	Preliminary results of a multicenter study evaluating a chemically enhanced surface for machined commercially pure titanium implants.	J Prosthet Dent.	Prospektive multicenter Fallserie	-	
413	8803340	Henry PJ	1996	Osseointegrated implants for single-tooth replacement: a prospective 5-year multicenter study.	Int J Oral Maxillofac Implants.	Prospektive multicenter Fallserie	-	

245				Restoration of the partially edentulous mouth--a comparison of overdentures, removable partial dentures, fixed partial dentures and implant treatment.	J Dent.		-	X in 2.1
414	8752550	Jemt T	1996	A 5-year prospective multicenter follow-up report on overdentures supported by osseointegrated implants.	Int J Oral Maxillofac Implants.	Prospektive multicenter Fallserie	-	
415	8349839	Rams TE	1993	Evaluation of peri-implant sulcular temperature.	J Clin Periodontol.	Prospektive kontrollierte klinische Studie	-	

5. Outcome: zu erwartende Prognose zukünftiger Implantate

5.1. dental implant AND prognosis AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
416	25106010	Bell C	2014	Immediate restoration of NobelActive implants placed into fresh extraction sites in the anterior maxilla.	J Oral Implantol.	Retrospektive Fallserie	-	
10				Bisphosphonates related osteonecrosis of the jaw.	Nat J Maxillofac Surg.		-	X in 1.1
417	23299652	Krieger E	2013	[Orthodontic treatment of patients medicated with bisphosphonates-a clinical case report].	J Orofac Orthop.	Case Report	-	
29				Long-term success of surgery in bisphosphonate-related osteonecrosis of the jaws (BRONJs).	Oral Oncol.		-	X in 1.1
33				Dental implications of bisphosphonate-related osteonecrosis.	Gerodontology.		-	X in 1.1
45				[Placing of oral implants in patients using bisphosphonates].	Ned Tijdschr Tandheelkd.		-	X in 1.1
46				Identification and treatment of bisphosphonate-	Implant Dent.		-	X in 1.1

				associated actinomycotic osteonecrosis of the jaws.				
47				Survival of dental implants among post-menopausal female dental school patients taking oral bisphosphonates: a retrospective study.	Compend Contin Educ Dent.		-	X in 1.1
418	20553153	Leonida A	2012	Immediate loading in mandible full-arch: pilot study in patients with osteoporosis in bisphosphonate therapy.	J Oral Implantol.	Case Repoort	-	
64				Bisphosphonate-related osteonecrosis of the jaw associated with dental implants.	J Oral Maxillofac Surg.		-	X in 1.1
419	20070753	Kalayci A	2010	Evaluation of osteoblastic activity around dental implants using bone scintigraphy.	Clin Oral Implants Res.	Prospektive Fallserie	-	
73				Osteonecrosis of the posterior mandible after implant insertion: a clinical and histological case report.	Clin Implant Dent Relat Res.		-	X in 1.1
420	19263627	Kasai T	2009	The prognosis for dental implants placed in patients taking oral bisphosphonates.	J Calif Dent Assoc.	-	-	
94				Outcomes of placing dental implants in patients taking oral bisphosphonates: a review of 115 cases.	J Oral Maxillofac Surg.		-	X in 1.1
421	19655490	Vailati F	2006	Severe attachment loss at the maxillary incisors: part 2.	Eur J Esthet Dent.	Case Report	-	
422	15755416	Mulligan R	2005	Osteoporosis: diagnostic testing, interpretation, and correlations with oral health--implications for dentistry.	Dent Clin North Am.	Narratives Review	-	

5.2. (bisphosphonate OR denosumab) AND persisting alveolar socket

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
423	20728032	Hutchinson M	2010	Radiographic findings in bisphosphonate-treated patients with stage 0 disease in the absence of bone	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	

				exposure.				
424	16982320	Groetz KA	2006	Persisting alveolar sockets-a radiologic symptom of BP-ONJ?	J Oral Maxillofac Surg.	Letter / Narratives Review	+	

5.3. (bisphosphonate OR denosumab) AND sharp bone edges AND jaw NOT children NOT osteogenesis imperfect

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
425	20674411	Wilde F	2007	The role of surgical therapy in the management of intravenous bisphosphonates-related osteonecrosis of the jaw.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Retrospektive Fallserie	-	
426	17972612	Schortinghuis J	2007	[Bisphosphonate-associated osteonecrosis of the jaws. 3. Two case reports].	Ned Tijdschr Tandheelkd.	Case Report	-	

5.4. (bisphosphonate OR denosumab) AND ossification AND jaw NOT children NOT osteogenesis imperfect

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
427	25613174	Ogata K	2015	Evaluation of the therapeutic effects of conditioned media from mesenchymal stem cells in a rat bisphosphonate-related osteonecrosis of the jaw-like model.	Bone.	Tierexperimentelle Studie	-	
428	25215248	Costa FW	2014	Clinical aspects, imaging features, and considerations on bisphosphonate-related osteonecrosis risk in a pediatric patient with osteogenesis imperfecta.	Case Rep Dent.	Case Report	-	

429	25032151	Sarkarat F	2014	Platelet-Rich Plasma in Treatment of Zoledronic Acid-Induced Bisphosphonate-related Osteonecrosis of the Jaws.	Trauma Mon.	Tierexperimentelle Studie	-	
430	24978685	Imai T	2014	"Phoenix jaw"-bone regeneration of the necrotic mandible between pathological fractures: an unusual but evocative course of bisphosphonate-related osteonecrosis.	J Craniofac Surg.	Case Report	-	
431	24727159	Boyce RW	2014	Infant cynomolgus monkeys exposed to denosumab in utero exhibit an osteoclast-poor osteopetrotic-like skeletal phenotype at birth and in the early postnatal period.	Bone.	Tierexperimentelle Studie	-	
432	24170800	Ersan N	2014	Teriparatide and the treatment of bisphosphonate-related osteonecrosis of the jaw: a rat model.	Dentomaxillofac Radiol.	Tierexperimentelle Studie	-	
433	23891015	Gerard DA	2014	Early inhibitory effects of zoledronic acid in tooth extraction sockets in dogs are negated by recombinant human bone morphogenetic protein.	J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
434	23746422	Dayisoğlu EH	2013	The effects of adjunctive parathyroid hormone injection on bisphosphonate-related osteonecrosis of the jaws: an animal study.	Int J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
435	23714970	González-García M	2013	Cell therapy in bisphosphonate-related osteonecrosis of the jaw.	J Craniofac Surg.	Case Report	-	
436	23688101	Kuroshima S	2014	Distinctive tooth-extraction socket healing: bisphosphonate versus parathyroid hormone therapy.	J Craniofac Surg.	Tierexperimentelle Studie	-	
437	23602673	Hong P	2013	Enhancement of bone consolidation in mandibular distraction osteogenesis: a contemporary review of experimental studies involving adjuvant therapies.	J Plast Reconstr Aesthet Surg.	Systematisches Review	-	
438	23265985	Baiomy AA	2014	Experimental comparison of the effects of locally	Oral Surg Oral Med Oral	Tierexperimentelle Studie	-	

				administered zoledronic acid and alendronate on the rate of mandibular distraction osteogenesis in dogs.	Pathol Oral Radiol.			
439	23246226	Ohbayashi Y	2013	Adjunct teriparatide therapy with monitoring of bone turnover markers and bone scintigraphy for bisphosphonate-related osteonecrosis of the jaw.	Oral Surg Oral Med Oral Pathol Oral Radiol.	Case Report	-	
440	22913278	González-García M	2012	Mesenchymal stem cells and bisphosphonate-related osteonecrosis of the jaw: the future?	Oral Dis.	Letter	-	
441	22688305	Bradaschia-Correa V	2012	Effect of alendronate on endochondral ossification in mandibular condyles of growing rats.	Eur J Histochem.	Tierexperimentelle Studie	-	
442	22623376	Aguirre JI	2012	Oncologic doses of zoledronic acid induce osteonecrosis of the jaw-like lesions in rice rats (<i>Oryzomys palustris</i>) with periodontitis.	J Bone Miner Res.	Tierexperimentelle Studie	-	
443	22563819	Patntirapong S	2012	Zoledronic acid suppresses mineralization through direct cytotoxicity and osteoblast differentiation inhibition.	J Oral Pathol Med.	In Vitro Studie	-	
30				Mandibular reconstruction with vascularized osseous free flaps: a review of the literature.	Asian Pac J Cancer Prev.		-	X in 1.1
444	22380992	Granados-García M	2011	Autoclaved bone autograph reconstituted with autologous bone marrow.	Cir Cir.	Tierexperimentelle Studie	-	
445	22359627	Yu YY	2012	Site specific effects of zoledronic acid during tibial and mandibular fracture repair.	PLoS One.	Prospektive kontrollierte Studie	-	
39				[Potential use of parathyroid hormone (PTH) in the treatments for oral diseases].	Clin Calcium.		-	X in 1.1
446	22166164	Said F	2012	The effect of etidronate on the periodontium of ovariectomized rats.	J Periodontol.	Tierexperimentelle Studie	-	
447	21945486	Küçük D	2011	Comparison of local and systemic alendronate on distraction osteogenesis.	Int J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
448	21938481	Ohe JY	2012	Bisphosphonates modulate the expression of OPG and	Clin Oral Investig.	In Vitro Studie	-	

				M-CSF in hMSC-derived osteoblasts.				
449	21856057	Marolt D	2012	Effects of pamidronate on human alveolar osteoblasts in vitro.	J Oral Maxillofac Surg.	In Vitro Studie		
450	21849044	Cella L	2011	Autologous bone marrow stem cell intralesional transplantation repairing bisphosphonate related osteonecrosis of the jaw.	Head Face Med.	Case Report	-	
451	21771209	Kim JH	2011	Effect of alendronate on healing of extraction sockets and healing around implants.	Oral Dis.	Tierexperimentelle Studie	-	
452	21392671	Fujita Y	2011	Effects of risedronate on cortical and trabecular bone of the mandible in glucocorticoid-treated growing rats.	Am J Orthod Dentofacial Orthop.	Tierexperimentelle Studie	-	
453	21358547	Wang K	2011	Modern concepts in mandibular reconstruction in oral and oropharyngeal cancer.	Am J Orthod Dentofacial Orthop.	Narratives Review	-	
454	21351151	Aghaloo TL	2011	Periodontal disease and bisphosphonates induce osteonecrosis of the jaws in the rat.	J Bone Miner Res.	Tierexperimentelle Studie	-	
54				Effects of short-term zoledronic acid treatment on bone remodeling and healing at surgical sites in the maxilla and mandible of aged dogs.	J Oral Maxillofac Surg.		-	X in 1.1
455	21122371	Zhang J	2010	[Effect of zoledronic acid on the differentiation and osteoprotegerin production of osteoblasts in rabbit].	Zhonghua Kou Qiang Yi Xue Za Zhi.	Tierexperimentelle Studie	-	
456	21050644	Pikdöken L	2011	Scintigraphic, histologic, and histomorphometric analyses of bovine bone mineral and autogenous bone mixture in sinus floor augmentation: a randomized controlled trial--results after 4 months of healing.	J Oral Maxillofac Surg.	Prospektive randomisierte kontrollierte Studie	-	
457	21040464	Kubek DJ	2010	Ovariectomy stimulates and bisphosphonates inhibit intracortical remodeling in the mouse mandible.	Orthod Craniofac Res.	Tierexperimentelle Studie	-	
56				Advantages and disadvantages of the use of bisphosphonates in oral and maxillofacial surgery.	Int Dent J.		-	X in 1.1

458	20946575	Silverman SL	2011	Bisphosphonate use in conditions other than osteoporosis.	Ann N Y Acad Sci.	Narratives Review	-	
459	20846154	Aguirre JI	2010	Effects of alendronate on bone healing after tooth extraction in rats.	Oral Dis.	Tierexperimentelle Studie	-	
460	20200938	Hokugo A	2010	Increased prevalence of bisphosphonate-related osteonecrosis of the jaw with vitamin D deficiency in rats.	J Bone Miner Res.	Tierexperimentelle Studie	-	
461	20144497	Gürbüz B	2010	Scintigraphic evaluation of osteoblastic activity in extraction sockets treated with platelet-rich fibrin.	J Oral Maxillofac Surg.	Prospektive randomisierte kontrollierte Studie	-	
462	19882100	Kobayashi Y	2010	Zoledronic acid delays wound healing of the tooth extraction socket, inhibits oral epithelial cell migration, and promotes proliferation and adhesion to hydroxyapatite of oral bacteria, without causing osteonecrosis of the jaw, in mice.	J Bone Miner Metab.	Tierexperimentelle Studie	-	
463	19681835	Kim MS	2009	Effects of bisphosphonate on the endochondral bone formation of the mandibular condyle.	Anat Histol Embryol.	Tierexperimentelle Studie	-	
464	19591974	Huja SS	2009	Zoledronic acid decreases bone formation without causing osteocyte death in mice.	Arch Oral Biol.	Tierexperimentelle Studie	-	
465	19580463	Allen MR	2010	Cancer treatment dosing regimens of zoledronic acid result in near-complete suppression of mandible intracortical bone remodeling in beagle dogs.	J Bone Miner Res.	Tierexperimentelle Studie	-	
466	19482390	Ding Y	2010	99mTechnetium-methylene diphosphonate bone imaging using low-intensity pulsed ultrasound: promotion of bone formation during mandibular distraction osteogenesis in dogs.	Br J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
467	19406538	Liu Y	2010	Character of distracted bone in irradiated canine	Br J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	

				mandibles and electrophysiological changes in the inferior alveolar nerve.				
468	18938273	Stefanik D	2008	Disparate osteogenic response of mandible and iliac crest bone marrow stromal cells to pamidronate.	Oral Dis.	Prospektive in Vitro Studie	-	
469	18848100	Tekin U	2008	Effects of alendronate on rate of distraction in rabbit mandibles.	J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
194				Effects of risedronate on alveolar bone loss and angiogenesis: a stereologic study in rats.	J Periodontol.		-	X in 1.7
470	18775204	Drake MT	2008	Bisphosphonates: mechanism of action and role in clinical practice.	Mayo Clin Proc.	Narratives Review	-	
471	18595621	Radfar L	2008	Bisphosphonates, osteonecrosis of the jaw, and dental treatment recommendations.	J Okla Dent Assoc.	Letter	-	
472	18423279	Pampu AA	2008	Histomorphometric evaluation of the effects of zoledronic acid on mandibular distraction osteogenesis in rabbits.	J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
473	18413829	Raje N	2008	Clinical, radiographic, and biochemical characterization of multiple myeloma patients with osteonecrosis of the jaw.	Clin Cancer Res.	Prospektive Fallserie	-	
474	18280968	Bedogni A	2008	Bisphosphonate-associated jawbone osteonecrosis: a correlation between imaging techniques and histopathology.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Retrospektive Fallserie	-	
475	18183447	Kimura M	2008	Bisphosphonate treatment increases the size of the mandibular condyle and normalizes growth of the mandibular ramus in osteoprotegerin-deficient mice.	Calcif Tissue Int.	Tierexperimentelle Studie	-	
476	17929529	Shi B	2007	Alveolar ridge preservation prior to implant placement with surgical-grade calcium sulfate and platelet-rich plasma: a pilot study in a canine model.	Int J Oral Maxillofac Implants.	Tierexperimentelle Studie	-	

477	17580062	Kamoun-Goldrat AS	2007	[Osteogenesis imperfecta and dentinogenesis imperfecta: diagnostic frontiers and importance in dentofacial orthopedics].	Orthod Fr.	Narratives Review	-	
478	17236837	Dannemann C	2007	Jaw osteonecrosis related to bisphosphonate therapy: a severe secondary disorder.	Bone.	Retrospektive Fallserie	-	
479	17120363	[No authors listed]	2006	Low-down on link between bone-builders and jaw damage.	Johns Hopkins Med Lett Health After 50.	Letter	-	
480	16860215	Pampu AA	2006	Experimental evaluation of the effects of zoledronic acid on regenerate bone formation and osteoporosis in mandibular distraction osteogenesis.	J Oral Maxillofac Surg.	Tierexperimentelle Studie	-	
481	12797419	Cehreli MC	2003	Biological reactions to a poly(L-lactide)-hydroxyapatite composite: a study in canine mandible.	J Biomater Appl.	Tierexperimentelle Studie	-	
482	10890724	Hunziker J	2000	Mandibular bone formation rates in aged ovariectomized rats treated with anti-resorptive agents alone and in combination with intermittent parathyroid hormone.	J Dent Res.	Tierexperimentelle Studie	-	
483	10102552	Meraw SJ	1999	Use of alendronate in peri-implant defect regeneration.	J Periodontol.	Tierexperimentelle Studie	-	
484	9689615	O'uchi N	1998	Inhibitory effects of YM175, a bisphosphonate, on the progression of experimental periodontitis in beagle dogs.	J Periodontol Res.	Tierexperimentelle Studie	-	
485	9619667	Gülaldi NC	1998	Scintigraphic evaluation of healing response after heterograft usage for alveolar extraction cavity.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Prospektive kontrollierte klinische Studie	-	
486	9379334	Yaffe A	1997	Local delivery of an amino bisphosphonate prevents the resorptive phase of alveolar bone following mucoperiosteal flap surgery in rats.	J Periodontol.	Tierexperimentelle Studie	-	
487	9005411	Berding G	1996	[Bone SPECT of the jaws after fracture, onlay osteoplasty of insertion of implants].	Nuklearmedizin.	Prospektive Fallserie	-	

488	7628781	Ogura H	1995	[Physiology and pharmacology of hard tissues--effect of chemicals on the formation and the resorption mechanism of tooth and bone].	Nihon Yakurigaku Zasshi.	Narratives Review	-	
489	2011362	Engelke W	1991	Assessment of bone remodeling in the temporomandibular joint by serial uptake measurement of technetium 99m-labeled methylene diphosphonate with a cadmium telluride probe.	Oral Surg Oral Med Oral Pathol.	Tierexperimentelle Studie	-	
490	3100751	Ubios AM	1986	Effect of diphosphonate on the prevention of X-radiation-induced inhibition of bone formation in rats.	J Oral Pathol.	Tierexperimentelle Studie	-	
491	6210558	Senekowitsch R	1982	Evaluation of ossification in jaw defects by radio-nuclide imaging.	Eur J Nucl Med.	Prospektive kontrollierte Studie	-	
492	6769081	Lee HK	1980	99m technetium diphosphonate bone scanning of the mandibular bone graft.	Oral Surg Oral Med Oral Pathol.	Case Report	-	

5.5. (bisphosphonate OR denosumab) AND bone remodeling AND post extraction AND jaw NOT children NOT osteogenesis imperfect

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
493	23348344	Khojasteh A	2013	Healing of extraction sockets and augmented alveolar defects following 1-year treatment with bisphosphonate.	J Craniofac Surg.	Tierexperimentelle Studie	-	
459				Effects of alendronate on bone healing after tooth extraction in rats.	Oral Dis.		-	X in 5.4
494	20458574	Allen MR	2011	Compromised osseous healing of dental extraction sites in zoledronic acid-treated dogs.	Osteoporos Int.	Tierexperimentelle Studie	-	
495	19371816	Allen MR	2009	The pathogenesis of bisphosphonate-related osteonecrosis of the jaw: so many hypotheses, so few	J Oral Maxillofac Surg.	Narratives Review	-	

				data.				
96				Implant placement with or without simultaneous tooth extraction in patients taking oral bisphosphonates: postoperative healing, early follow-up, and the incidence of complications in two private practices.	J Periodontol.		-	X in 1.1
490				Effect of diphosphonate on the prevention of X-radiation-induced inhibition of bone formation in rats.	J Oral Pathol.		-	X in 5.4
496	6219214	Olson HM	1982	Inhibition of post-extraction alveolar ridge resorption in rats by dichloromethane diphosphonate.	J Periodontal Res.	Tierexperimentelle Studie	-	

5.6. (bisphosphonate OR denosumab) AND radiologic changes AND jaw NOT children NOT osteogenesis imperfecta

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	Doppelt vorhanden
497	25105817	Pushalkar S	2014	Oral microbiota and host innate immune response in bisphosphonate-related osteonecrosis of the jaw.	Int J Oral Sci.	Prospektive kontrollierte klinische Studie	-	
498	25053572	Fleisher KE	2014	Fluorodeoxyglucose positron emission tomography with computed tomography detects greater metabolic changes that are not represented by plain radiography for patients with osteonecrosis of the jaw.	J Oral Maxillofac Surg.	Retrospektive Fallserie	-	
499	24586331	Hesse B	2014	Alterations of mass density and 3D osteocyte lacunar properties in bisphosphonate-related osteonecrotic human jaw bone, a synchrotron μ CT study.	PLoS One.	Prospektive In Vitro Studie	-	
500	24170801	Zaman MU	2013	A retrospective study of digital subtraction technique to detect sclerotic changes in alveolar bone on intraoral radiographs of bisphosphonate-treated patients.	Dentomaxillofac Radiol.	Retrospektive Fallserie	-	

501	19926757	Morag Y	2009	Bisphosphonate-related osteonecrosis of the jaw: a pictorial review.	Radiographics.	Narratives Review	-	
502	18068792	Bisdas S	2008	Biphosphonate-induced osteonecrosis of the jaws: CT and MRI spectrum of findings in 32 patients.	Clin Radiol.	Retrospektive Fallserie	-	
503	12521065	Ferreira RI	2002	Bone scintigraphy as an adjunct for the diagnosis of oral diseases.	J Dent Educ.	Narratives Review	-	
504	10936843	Khan Q	2000	The role of quantitative single photon emission computerized tomography (SPECT) in the osseous integration process of dental implants.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Prospektive Fallserie	-	
482				Mandibular bone formation rates in aged ovariectomized rats treated with anti-resorptive agents alone and in combination with intermittent parathyroid hormone.	J Dent Res.		-	X in 5.4
505	8872221	Bachmann G	1996	The role of magnetic resonance imaging and scintigraphy in the diagnosis of pathologic changes of the mandible after radiation therapy.	Int J Oral Maxillofac Surg.	Prospektive Fallserie	-	

Handrecherche / weitere Internetrecherche

Nr.	PMID / URL / Quelle	Erstautor	Publikationsjahr	Titel	Studientyp	Qualitätsstufe etc.	
506	http://www.zm-online.de/hefte/Periimplantoplastik-bei-Bisphosphonaten_283983.html#1	Buttchereit I	2015	Periimplantoplastik bei Bisphosphonaten	Case Report	-	
507	http://www.awmf.org/leitlinien/detail/II/007-091.html	Grötz K	2012	Bisphosphonat-assoziierte Kiefernekrosen S – 3 Leitlinie	Leitlinie / Guideline	+	
508	www.hsk-	Eberle J	2013	Zahnärztliche Betreuung von Tumorpatienten	Narratives Review	-	

	wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/Zahnärztliche_Betreuung_Tumorkranker_2013.pdf						
509	https://www.dginet.de/web/dgi/laufzettel-bisphosphonate	Grötz K		Laufzettel Bisphosphonate Risiko-Evaluation bei antiresorptiver Therapie vor Implantation	Letter	+	
510	www.hsk-wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/03_2013_Groetz.pdf	Grötz K	2013	Implantate und Bisphosphonat-Therapie	Systematisches Review	+	
511	www.hsk-wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/MKG_Link5.pdf	Grötz K	2010	Bei welchen Bisphosphonat-Patienten darf ich eigentlich implantieren? Ein systematisches Review	Systematisches Review	+	
512	www.hsk-wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/MKG_Link12.pdf	Grötz K	2005	Osteonekrose des Kiefers unter Bisphosphonat- Langzeittherapie	Case Report / Narratives Review	-	
513	Groetz, K.A. and T.F. Wolff, Handbuch MKG 2014 : MKG- Update 2014 ONKO II: SUPPORTIVE TU-BETREUUNG. 2014, Wiesbaden: Herausgeber: Groetz, Knut A., Wiesbaden; Schmidt-Westhausen, Andrea M, Berlin; Wagner, Wilfried, Mainz; ISBN 978-3-86302-085-9.	Grötz K	2014	MKG-Update 2014 ONKO II: SUPPORTIVE TU- BETREUUNG.		-	
514	Groetz, K.A. and B.L.J. Schmidt, Handbuch MKG Update, Kap 4: ONKO II: SUPPORTIVE TU-BETREUUNG. 2013: Herausgeber: Groetz, Knut A., Wiesbaden; Schmidt- Westhausen, Andrea M, Berlin; Wagner, Wilfried, Mainz; ISBN 978-3-86302-052-1.	Grötz K	2013	MKG Update 2013 ONKO II: SUPPORTIVE TU- BETREUUNG.		-	
515	Groetz, K.A. and B.L.J. Schmidt, Handbuch MKG UPDATE, Kap. 4: ONKO II: AMBULANTE TU-BETREUUNG. 2012: Herausgeber: Groetz, Knut A., Wiesbaden; Schmidt-	Grötz K	2012	MKG UPDATE 2012 ONKO II: AMBULANTE TU- BETREUUNG		-	

	Westhausen, Andrea M., Berlin; Wagner, Wilfried, Mainz; ISBN 978-3-86302-028-6.						
516	Groetz, K.A. and B.L.J. Schmidt, Handbuch MKG UPDATE Kap. 5: ONKO II: AMBULANTE TU-BETREUUNG. 2011: Herausgeber: Groetz, Knut A., Wiesbaden; Schmidt- Westhausen, Andrea M., Berlin; ISBN 978-3-86302-007-1.	Grötz K	2011	Handbuch MKG UPDATE 2011 ONKO II: AMBULANTE TU-BETREUUNG.		-	
517	Groetz, K.A. and B.L.J. Schmidt, Handbuch MKG UPDATE Kap. 3: ONKO I: AMBULANTE TU-BETREUUNG. 2010: Herausgeber: Groetz, Knut A., Wiesbaden; Schmidt- Westhausen, Andrea M., Berlin; ISBN 978-3-642-11423-6.	Grötz K	2010	Handbuch MKG UPDATE 2010 ONKO I: AMBULANTE TU-BETREUUNG		-	
518	ISBN 978-3-86302-138-2	Grötz K	2015	MKG-Update 2015 ONKO II: SUPPORTIVE TU- BETREUUNG.		-	
519	23512234 Oral Maxillofac Surg.	Krimmel M	2014	Does dental and oral health influence the development and course of bisphosphonate- related osteonecrosis of the jaws (BRONJ)?	Retrospektive Fallserie	+	
520	23582590 J Oral Maxillofac Surg.	Tsao C	2013	Oral health risk factors for bisphosphonate- associated jaw osteonecrosis.	Retrospektive kontrollierte klinische Studie	+	
521	23786404 J Periodontol.	Thumbigere- Math V	2014	Periodontal disease as a risk factor for bisphosphonate-related osteonecrosis of the jaw.	Retrospektive kontrollierte klinische Studie	+	
522	23525860 Clin Oral Investig.	Walter C	2014	Radiologic bone loss in patients with bisphosphonate-associated osteonecrosis of the jaws: a case-control study.	Retrospektive kontrollierte klinische Studie		

Anhang 2: einbezogene Studien

1. Outcome: ONJ Risiko

1.1 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (dental implant OR Periimplantitis)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe	
1	25764480	Al-Sabbagh M	2015	Osteoporosis and bisphosphonate-related osteonecrosis in a dental school implant patient population.	Implant Dent.	Retrospektive Fallserie	+	
2	25701305	Nisi M	2015	Risk factors influencing BRONJ staging in patients receiving intravenous bisphosphonates: a multivariate analysis.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
3	25234534	Holzinger D	2014	Effect of dental implants on bisphosphonate-related osteonecrosis of the jaws.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
4	23866309	López-Cedrún JL	2013	Oral bisphosphonate-related osteonecrosis of the jaws in dental implant patients: a case series.	Br J Oral Maxillofac Surg.	Retrospektive Multycenter Fallserie	+	
5	23445465	Tam Y	2014	Osteonecrosis of the jaw after implant surgery in patients treated with bisphosphonates--a presentation of six consecutive cases.	Clin Implant Dent Relat Res.	Case Reports	+	
6	23278625	Kwon TG	2014	Osteonecrosis associated with dental implants in	Clin Oral Implants Res.	Retrospektive Fallserie	+	

				patients undergoing bisphosphonate treatment.				
7	22415216	Jacobsen C	2013	Osteopathology induced by bisphosphonates and dental implants: clinical observations.	Clin Oral Investig.	Retrospektive Fallserie	+	
8	23738968	Famili P	2011	Survival of dental implants among post-menopausal female dental school patients taking oral bisphosphonates: a retrospective study.	Compend Contin Educ Dent.	Retrospektive Fallserie	+	
9	20946206	Kwon YD	2011	Retrospective study of two biochemical markers for the risk assessment of oral bisphosphonate-related osteonecrosis of the jaws: can they be utilized as risk markers?	Clin Oral Implants Res.	Retrospektive Fallserie	+	
10	20434422	Koka S	2010	Survival of dental implants in post-menopausal bisphosphonate users.	J Prosthodont Res.	Retrospektive Fallserie	+	
11	20307764	Lazarovici TS	2010	Bisphosphonate-related osteonecrosis of the jaw associated with dental implants.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
12	20116705	Goss A	2010	The nature and frequency of bisphosphonate-associated osteonecrosis of the jaws in dental implant patients: a South Australian case series.	J Oral Maxillofac Surg.	Case Reports	+	
13	19772941	Lo JC	2010	Prevalence of osteonecrosis of the jaw in patients with oral bisphosphonate exposure.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	

14	18423296	Bell BM	2008	Oral bisphosphonates and dental implants: a retrospective study.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
15	18201600	Grant BT	2008	Outcomes of placing dental implants in patients taking oral bisphosphonates: a review of 115 cases.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
16	17760533	Fugazzotto PA	2007	Implant placement with or without simultaneous tooth extraction in patients taking oral bisphosphonates: postoperative healing, early follow-up, and the incidence of complications in two private practices.	J Periodontol.	Retrospektive Fallserie	+	
17	16796276	Jeffcoat MK	2006	Safety of oral bisphosphonates: controlled studies on alveolar bone.	Int J Oral Maxillofac Implants.	Randomisierte kontrollierte klinische Studie	+	
18	16243172	Marx RE	2005	Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis) of the jaws: risk factors, recognition, prevention, and treatment.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	

1.2. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND denture

NR.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	
19	25212129	Niibe K	2015	Osteonecrosis of the jaw in patients with dental prostheses being treated with bisphosphonates or	J Prosthodont Res.	Letter	+	

				denosumab.				
20	22862971	Hasegawa Y	2012	Influence of dentures in the initial occurrence site on the prognosis of bisphosphonate-related osteonecrosis of the jaws: a retrospective study.	Oral Surg Oral Med Oral Pathol Oral Radiol.	Retrospektive Fallserie	+	
21	22704590	Jabbour Z	2012	The outcomes of conservative and surgical treatment of stage 2 bisphosphonate-related osteonecrosis of the jaws: a case series.	Int J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
22	19805682	Vahtsevanos K	2009	Longitudinal cohort study of risk factors in cancer patients of bisphosphonate-related osteonecrosis of the jaw.	J Clin Oncol.	Retrospektive Kohortenstudie	+	
23	19592261	Kos M	2010	Bisphosphonate-related osteonecrosis of the jaws: a review of 34 cases and evaluation of risk.	J Craniomaxillofac Surg.	Retrospektive Fallserie	+	
24	18801674	Carmagnola D	2008	Dental and periodontal history of oncologic patients on parenteral bisphosphonates with or without osteonecrosis of the jaws: a pilot study.	Oral Surg Oral Med Oral Pathol Oral Radiol Endod.	Retrospektive Fallserie	+	
25	18602738	Walter C	2008	Prevalence and risk factors of bisphosphonate-associated osteonecrosis of the jaw in prostate cancer patients with advanced disease treated with zoledronate.	Eur Urol.	Retrospektive Fallserie	+	
26	18574158	Kyrgidis A	2008	Bisphosphonate-related osteonecrosis of the jaws: a case-control study of risk factors in breast cancer	J Clin Oncol.	Retrospektive Fallserie	+	

				patients.				
27	18176650	Kumar SK	2008	Osteonecrosis of the jaws secondary to bisphosphonate therapy: a case series.	J Contemp Dent Pract.	Case Report	+	
28	17598065	Yarom N	2007	Osteonecrosis of the jaw induced by orally administered bisphosphonates: incidence, clinical features, predisposing factors and treatment outcome.	Osteoporos Int.	Retrospektive Multicenter Studie	+	
29	16941133	Walter C	2007	Prevalence of bisphosphonate associated osteonecrosis of the jaw within the field of osteonecrosis.	Support Care Cancer.	Retrospektive Fallserie	+	
30	16314620	Bamias A	2005	Osteonecrosis of the jaw in cancer after treatment with bisphosphonates: incidence and risk factors.	J Clin Oncol.	Retrospektive Fallserie	+	

1.3. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND (jaw augmentation OR sinus lift)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

1.4. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND antibiotics AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

1.5. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND xerostomia

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

1.6. (bisphosphonate OR denosumab) AND osteonecrosis jaw AND ctx

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

1.7 (bisphosphonate OR denosumab) AND osteonecrosis jaw AND medication time

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

2. Outcome: Kaufunktion

2.1. masticatory efficiency AND dental implant AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

2.2. tmj disorders AND dental implant AND prevention AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

3. Outcome: Lebensqualität

3.1. quality of life AND dental implant AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	
31	26146501	DeBaz C	2015	Dental Implant Supported Restorations Improve Quality of Life in Osteoporotic Women.	Int J Dent			

3.2. oral health related quality of life AND dental implant NOT elderly patients NOT oral cavity cancer

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

4. Outcome: Prognose der Restbezahnung

4.1. prognosis remaining dentition AND dental implant AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5. Outcome: zu erwartende Prognose zukünftiger Implantate

5.1. dental implant AND prognosis AND (bisphosphonate OR denosumab)

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5.2. (bisphosphonate OR denosumab) AND persisting alveolar socket

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	
32	20728032	Hutchinson M	2010	Radiographic findings in bisphosphonate-treated patients with stage 0 disease in the absence of bone exposure.	J Oral Maxillofac Surg.	Retrospektive Fallserie	+	
33	16982320	Groetz KA	2006	Persisting alveolar sockets-a radiologic symptom of BP-ONJ?	J Oral Maxillofac Surg.	Letter / Narratives Review	+	

5.3. (bisphosphonate OR denosumab) AND sharp bone edges AND jaw NOT children NOT osteogenesis imperfect

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5.4. (bisphosphonate OR denosumab) AND ossification AND jaw NOT children NOT osteogenesis imperfect

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5.5. (bisphosphonate OR denosumab) AND bone remodeling AND post extraction AND jaw NOT children NOT osteogenesis imperfect AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5.6. (bisphosphonate OR denosumab) AND radiologic changes AND jaw NOT children NOT osteogenesis imperfect AND dental implant

Nr.	PMID	Erstautor	Publikationsjahr	Titel	Journal mit Verlinkung zu PubMed	Studientyp	Qualitätsstufe etc.	

5.7. Handrecherche / weitere Internetrecherche

Nr.	PMID / URL / Quelle	Erstautor	Publikationsjahr	Titel	Studientyp	Qualitätsstufe etc.	
34	http://www.awmf.org/leitlinien/detail/ll/007-091.html	Grötz K	2012	Bisphosphonat-assoziierte Kiefernekrosen S – 3 Leitlinie	Leitlinie / Guideline	+	
35	https://www.dginet.de/web/dgi/laufzettel-bisphosphonate	Grötz K		Laufzettel Biophosphonate Risiko-Evaluation bei antiresorptiver Therapie vor Implantation	Letter	+	
36	www.hsk-wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/03_2013_Groetz.pdf	Grötz K	2013	Implantate und Bisphosphonat-Therapie	Systematisches Review	+	Dental implant 1.1
37	www.hsk-wiesbaden.de/fileadmin/redaktion/HSK/MKG/Dateien/MKG_Link5.pdf	Grötz K	2010	Bei welchen Bisphosphonat-Patienten darf ich eigentlich implantieren? Ein systematisches Review	Systematisches Review	+	Dental implant 1.1

38	23512234 Oral Maxillofac Surg.	Krimmel M	2014	Does dental and oral health influence the development and course of bisphosphonate-related osteonecrosis of the jaws (BRONJ)?	Retrospektive Fallserie	+	Denture
39	23582590 J Oral Maxillofac Surg.	Tsao C	2013	Oral health risk factors for bisphosphonate-associated jaw osteonecrosis.	Retrospektive kontrollierte klinische Studie	+	Denture
40	23786404 J Periodontol.	Thumbigere-Math V	2014	Periodontal disease as a risk factor for bisphosphonate-related osteonecrosis of the jaw.	Retrospektive kontrollierte klinische Studie	+	Dental implant 1.1
41	20171469 J Oral Maxillofac Surg.	Martin DC	2010	Characteristics of implant failures in patients with a history of oral bisphosphonate therapy.		+	Dental implant 1.1
42	19438964 Clin Implant Dent Relat Res.	Shabestari GO	2010	Implant placement in patients with oral bisphosphonate therapy: a case series		+	Dental implant 1.1
43	20594057 J Oral Implantol.	Zahid TM	2011	Influence of bisphosphonates on alveolar bone loss around osseointegrated implants		+	Dental implant 1.1
44	23057037 Int J Oral Maxillofac Implants.	Memon S	2012	Oral bisphosphonates: early endosseous dental implant success and crestal bone changes. A retrospective study.		+	Dental implant 1.1
45	22324443 J Clin Periodontol.	Yip JK	2012	Association between oral bisphosphonate use and dental implant failure among middle-aged women.		+	Dental implant 1.1

46	24535075 Clin Oral Investig.	Walter_C	2014	Analysis of reasons for osteonecrosis of the jaws.		+	Dental implant 1.1
47	21798645 J Oral Maxillofac Surg	López-Jornet_P	2011	Perioperative antibiotic regimen in rats treated with pamidronate plus dexamethasone and subjected to dental extraction: a study of the changes in the jaws.		+	Antibiotics
48	19021059 Leuk Lymphoma	Montefusco_V	2008	Antibiotic prophylaxis before dental procedures may reduce the incidence of osteonecrosis of the jaw in patients with multiple myeloma treated with bisphosphonates		+	Antibiotics
49	22843941 Anticancer Res	Kyrgidis_A	2012	Quality of life in breast cancer patients with bisphosphonate-related osteonecrosis of the jaws and patients with head and neck cancer: a comparative study using the EORTC QLQ-C30 and QLQ-HN35 questionnaires.		+	Lebensqualität
50	25639776	Boquete-Castro_A	2015	Denosumab and osteonecrosis of the jaw. A systematic analysis of events reported in clinical trials.	Clin Oral Implants Res.	Systematisches Review / Meta Analyse	+